

GeoBox

G406 User Guide

Quad-Channel Video Wall Controller with Multi-video Display Function

4 in / 4 out, up to 8k/1k 30Hz and 4K/2k 60 Hz input, 10-bit, 4:4:4 Chroma sampling, Matrix switch function, multi-windows display, independent rotation/scaling/cropping



Technical support:

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DCi/UHD 4k/60/4:4:4	HDMI 2.0 DisplayPort 1.2	HDCP 2.2/1.4	10-bit High-end scaler	Cadence Film 3:2 / 2:2	3D Motion De-interlace	Deep Color xvYCC/12-bit	Matrix SW Free source selection	
Mosaic Irregular wall	Multi-Unit Cascade	Multi-view Discrete display	Flexible Aspect Ratio Bezel Correction	Rotation Landscape Portrait	Loop Out Daisy chain	Control IR/USB/RS232 /Ethernet	Projector Output overlap	RoHS CE FCC

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This device is designed and tested to the highest standards and backed by thirty-month parts and labor warranty. Warranties are effective upon the first delivery date to the end customer and are non-transferable. Warranty-related repairs include parts and labor but do not include repair of faults resulting from user negligence, special modifications, abuse (mechanical damage), shipping damage, and other unusual damages. The customer shall pay shipping charges when the unit is returned for repair.

Manufacturers will pay shipping charges for return shipments to customers.

The manufacturer does not assume responsibility for consequential damages, expenses or loss of revenue, inconvenience, or interruption in operation experienced by the customer. The warranty service shall not automatically extend the warranty period.

Please get in touch with us for more information. When the product needs to be returned for repair, inform and ask for a Return Material Authorization number.

FCC/CE statement

This equipment has been tested and found to comply with the limits for a Class A digital device under part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential/commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used by the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Introduction

GeoBox G406 is a new generation 4k2k @60Hz four screens video wall controller to allow great freedom in creating any scale video wall with multiple contents and different LCD arrays. It incorporates two HDMI 2.0b, two DisplayPort 1.2 inputs, two HDMI 2.0b loop-through ports with HDCP 2.2/1.4, and four synchronized HDMI 1.4 outputs. Each output has independent image rotation/flip, scaling, cropping, and color adjustment.

G406 is designed with a 2x4 matrix switcher and multi-video display function to display 1, 2, 3, or 4 independent contents on four LCD video walls. Two HDMI 2.0b loop-through ports are designed for multiple unit cascades, allowing users to select two different contents for the entire video wall.

It is pure hardware, a standalone system with ease of use. All operations can be implemented through front panel keypads, IR remote controllers, USB, RS232, or Ethernet. No other PC, Zero Client, appropriate device, or software tool is required.

Features

- 4x HDMI 2.0b inputs & 4x HDMI 1.4 outputs with flexible multi-unit cascade.
- Support up to 4k/2k @60Hz and 7680x1200 @30Hz input resolution.
- All inputs and outputs support HDCP compliance: input - HDCP 2.2/1.4, output - HDCP 1.4.
- The matrix switch function allows multiple-video display, with 1/2/3/4 contents on 4x LCD.
- Dual Loop-through ports for multiple unit cascade with two selectable inputs.
- Pixel-based position alignment up to ± 1800 pixels in H&V for flexible image capture, cropping, position alignment, bezel compensation & irregular video wall.
- Set overlap pixels up to 1800 pixels for projector edge blending application.
- Each channel has independent image color adjustment, cropping, scaling, and bezel correction.
- Independent image rotation and flip/mirror in each channel for variable landscape, portrait, and irregular video wall display.
- The selectable output resolution and programmable EDID optimize video quality.
- Flexible aspect ratio adjustment on each edge up to ± 1800 pixels.
- Frame-Lock function for perfect synchronization among output channels.
- The G406 can be a Quad channel processor or two independent dual-channel processors.
- Easy setup via IR, front panel keypad, USB, RS232 & Ethernet. No PC is required.
- Ready for a 24/7 working environment.

Quick Setup Guide

1. Content in the packing box

- The G406 Quad Channel Video Wall Controller
- 1x IR Remote Controller with battery
- 1x IR Extending Receiver with 1.8m cable
- 1x AC Main Power Cable
- 1x DC 12V Power Supply Unit
- Mounting Rack with screw (Option)
- Please download the User Guide, PC Tool, and test pattern at www.geoboxav.com.

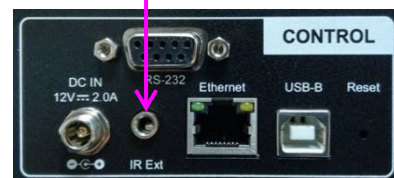
2. Quick Setup via IR Remote Controller

2.1. How to extend the distance of IR control

- IR remote controller has all the functions the same as front panel keypads for the operation of G406.
- IR receiver is on Front Panel. One 3.5ø mm audio connector for the IR extender is located at the back of the Panel of G406. 1.8m IR extension cable is equipped in the postering. Users can add an audio cable to extend the distance to 20 meters.

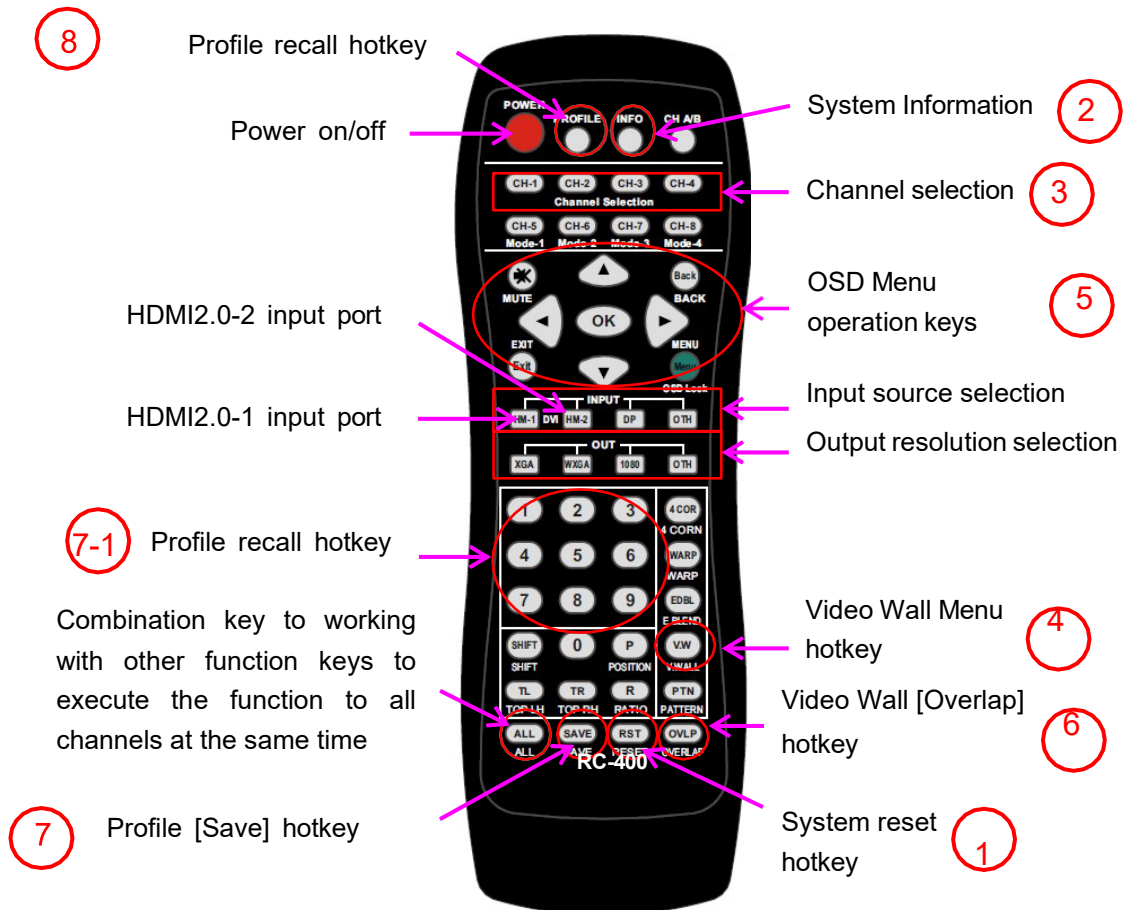


Audio connector for IR extender



2.2. How to avoid IR interference in multiple unit application

- If multiple units are used, the users can set different [Box ID] (#1 - #99) or IP addresses in each Box for individual control. The [Box ID] number range for IR control is #1 - #9.
- Users can control individual GeoBox through the below method when all boxes or IR extender receivers are installed together.
 - ✓ Pressing the 851 number key on the remote controller will lock all other G406 OSD menus except G406 with Box ID #1. Users can see a flashing LED on the Front Panel for the units with OSD locked.
 - ✓ Press 853 will only unlock ID # 3 G406 for further OSD operation and lock all the others.
 - ✓ Press 850 will unlock all G406 OSD Menu. The remote controller can control all boxes at the same time.



2.3. Quick Video Wall setting through the remote controller

- 1) Click the [RESET] hotkey to clear unnecessary settings. Each Processor shall be reset separately.
- 2) Click the [INFO] key and check whether the input/output timings are correct.
- 3) Select Channel 1 to do settings.
- 4) Click [V. Wall] hotkey to open Video Wall OSD menu.
- 5) Use OSD Operation keys to do [Zoom], [Pan], and [Overlap] settings.
- 6) If necessary, use [Overlap] hotkey to adjust the image position or aspect ratio.

Please repeat (3) to (6) processes for all channels.

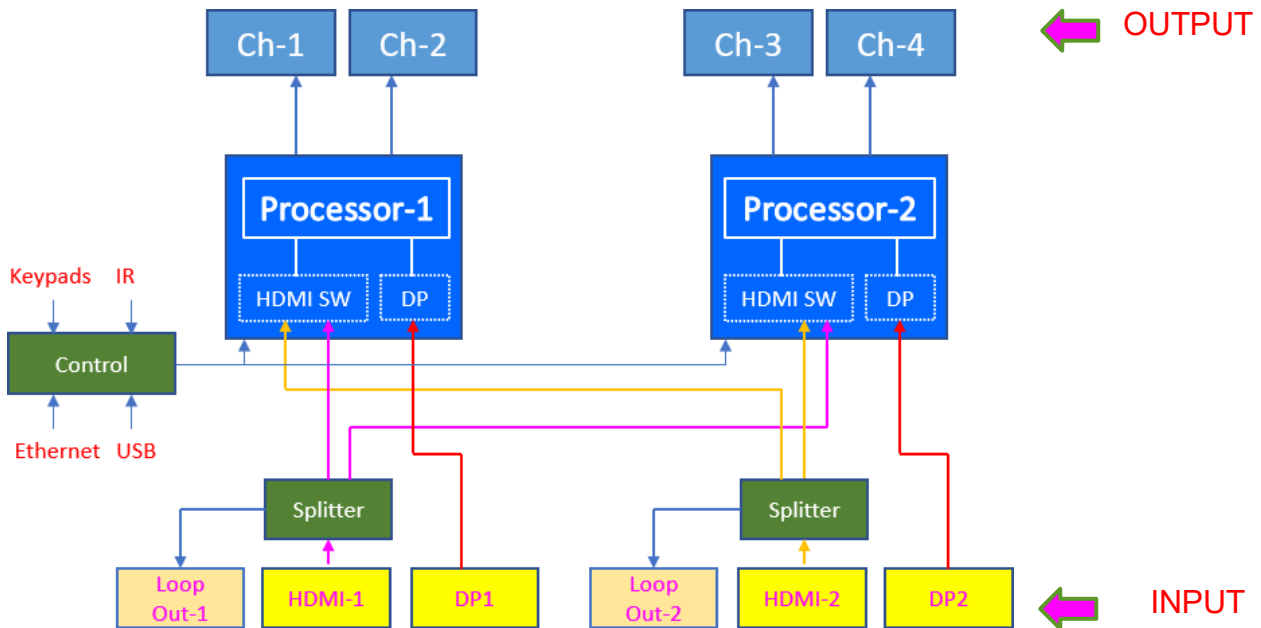
- 7) After finishing the settings for all channels, click the [Save] hotkey, then click the Number key (7-1) to save the result into [Profile]→ [Index]. Only 1-5 are valid for selection. The user can save twice to different Indexes as a backup.

Click [Reset] (1) hotkey again to reset the system to test whether the setting is saved correctly.

- 8) Click the [Profile] hotkey and click the Number key (7-1) again to recall the setting and make sure the settings are saved correctly.

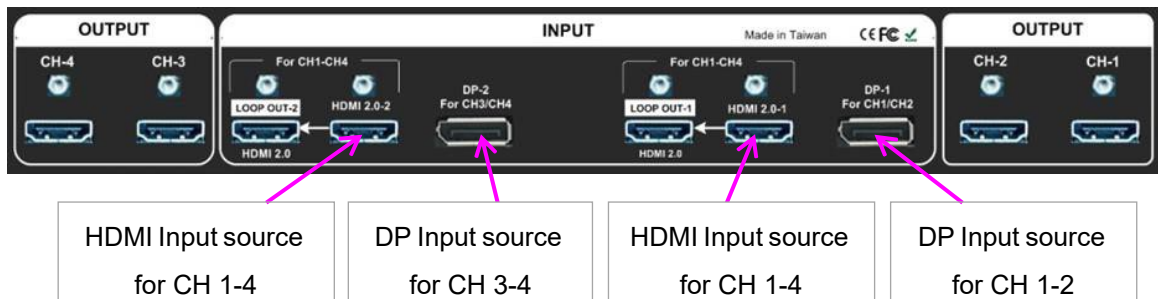
Detailed System Setup and operation

1. System structure



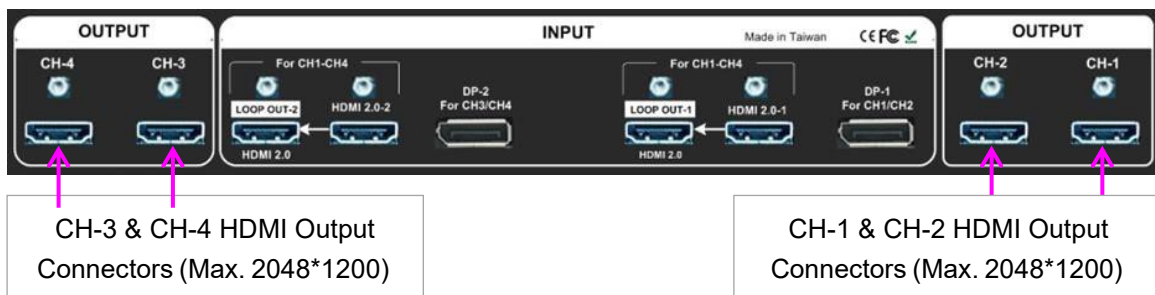
- Processor-1 controls CH-1 / CH-2 and Processor-2 controls CH-3 / CH-4.
- The settings for system control are done by Processor-1 (CH-1/CH-2).
- Each processor has an independent System Reset and Save.
- Each processor shares the same OSD menu. Users can switch between two output channels in each Processor by [CH A/B] hotkey in the remote controller.
- HDMI-1/HDMI-2 input ports become matrix switchers for Processor-1 & Processor-2. Each processor can only select one HDMI input.
- Each DP port is specific for one processor only.
- Each input port has independent EDID settings.
- Each output has independent image rotation/flip, scaling, cropping, and color adjustment.

2. Connecting the Inputs

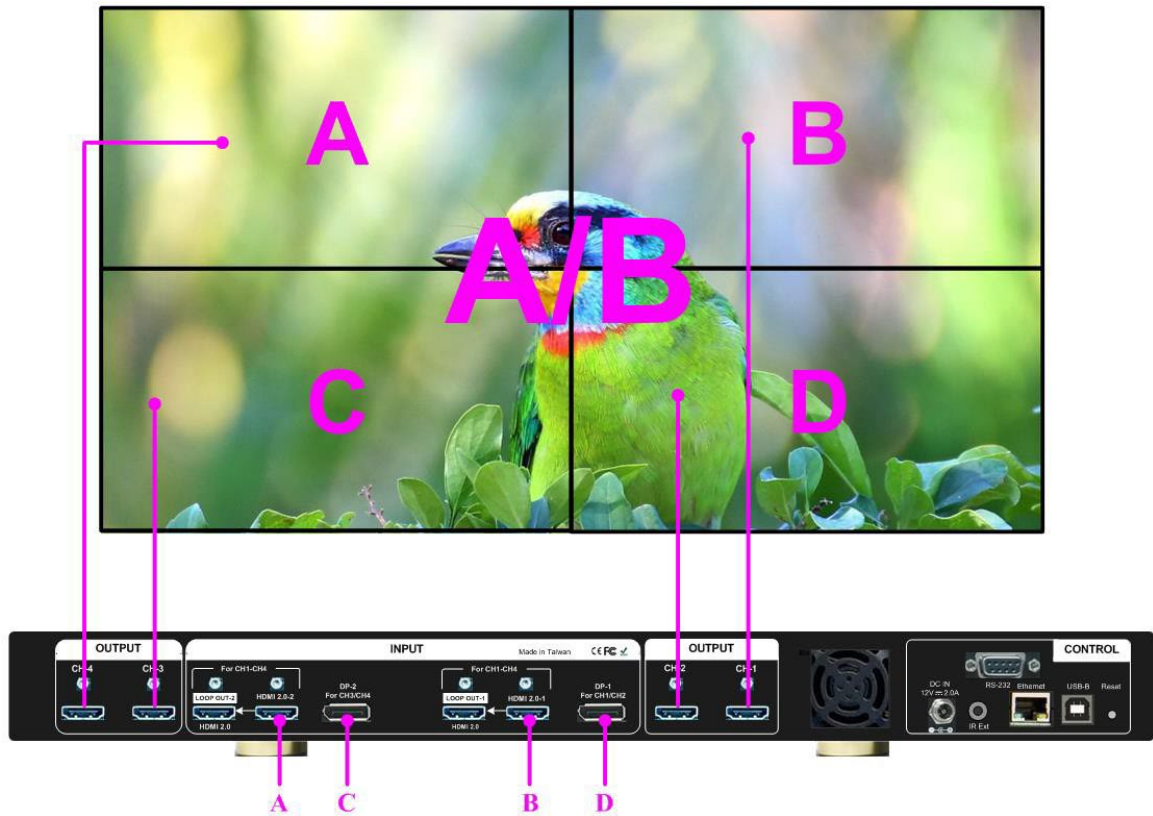


- Please connect the signal source to the HDMI input port before configuring the video wall. Otherwise, the settings will assume the input resolution is the same as the output resolution. It may affect the Video wall Overlap setting result.
- HDMI2.0-1 or HDMI2.0-2 input source can be displayed across the entire video wall (all-in-one).
- Each HDMI input source can be displayed freely in either CH 1/2 or CH 3/4 output to show one or two discrete contents on the video wall. It is one kind of matrix switch function.
- Processor-1 is assigned to the CH 1/2 output, and Processor-2 is assigned to the CH 3/4 output. Each Processor can only select one HDMI input source. While CH-1 selects HDMI2.0-1 as the input source, the CH-2 input source will also be switched to HDMI2.0-1 simultaneously. A similar restriction will apply to Processor-2 (CH 3/4).
- The DP-1 input source can only be displayed in CH-1 or CH-2 output port. Only the DP-2 input source can be presented in CH-3 or CH-4. Users can select HDMI2.0-1 for CH1 and DP-1 for CH2 or vice versa.
- When a DP input source is selected for one output port, the other output port in the same Processor can still choose the same DP input or any HDMI input source.
- The input signal sources can display 1, 2, 3, or 4 contents across a 2x2 video wall.

3. Connecting the Outputs

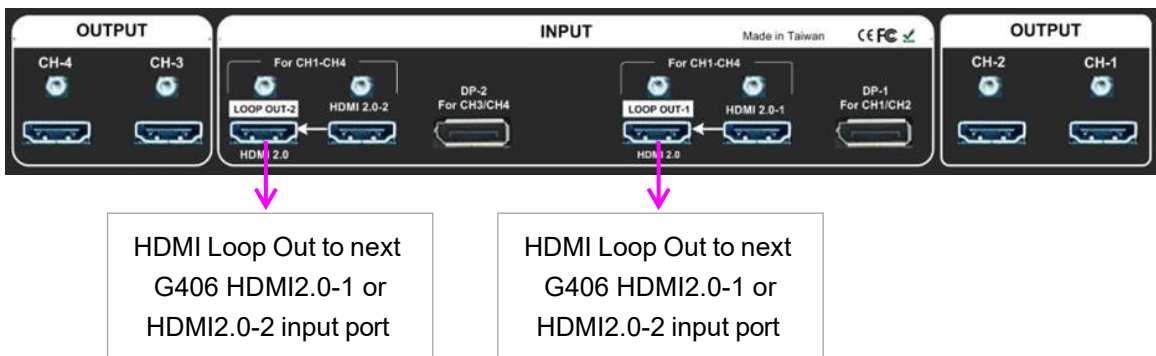


- The user can connect any output to any monitor to display a piece of material over the entire video wall. The user can assign the final picture position via the Video Wall [PAN] settings.
- Suppose the user wishes to display a DisplayPort input source in a specific area or two, three, or four different video walls; in that case, the output connection in Processor-1 and Processor-2 must be configured.
- Keep in mind that DP1 can only be seen in CH1/CH2. DP2 is only available in CH3/CH4.



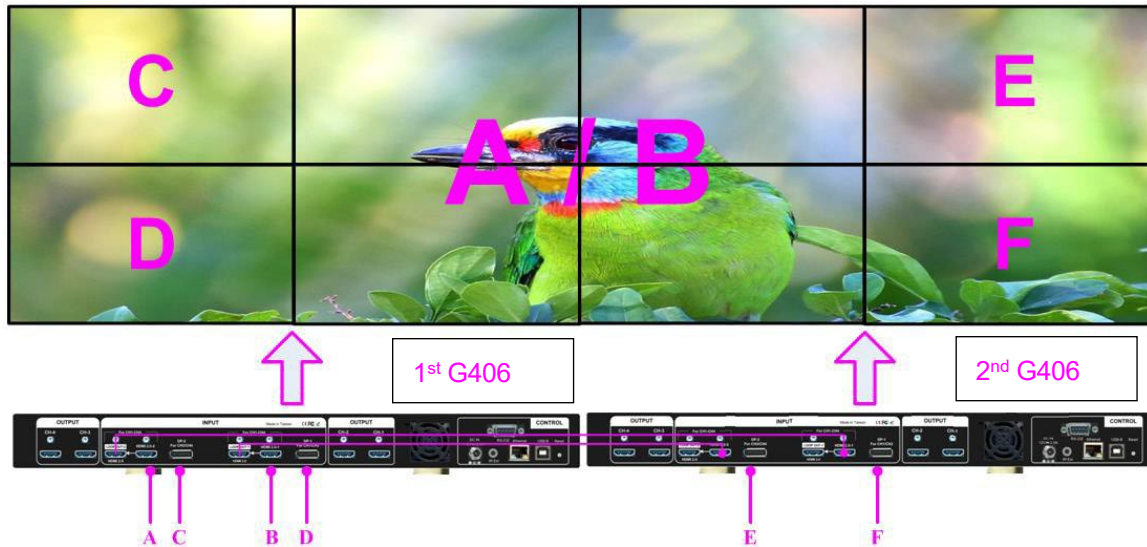
A & B, A & C, or B & D locations can be swapped for discrete content display.

4. HDMI Loop Out ports for Multiple Unit Connection



- Loop Out-1 outputs the same unprocessed source signal as HDMI2.0-1. Loop Out-2 provides the same unprocessed source signal from the HDMI2.0-2 input connection.
- In the following G-406, the user can connect any Loop Out signal to any HDMI input port. There is no unique HDMI input port designated.
- The user can link up to ten(10) G406 devices through a daisy chain connection. The number of daisy chain connections is proportional to the quality of HDMI cables and the signal source resolution—a suitable cable or a lower resolution signal source can connect more devices. The user can also add an HDMI splitter at the front end to enhance the number of daisy chain connections for a big-scale video wall. For example, 1x4 can be used.
- At the front end, an HDMI splitter distributes the same signal to four daisy chain units. If each daisy chain group contains 8 G406 units, the total number of LCDs that can be connected is $8 \times 4 \times 4 = 128$.

- When a user connects two Loop Out ports for multiple G406, the user can select any looping signal source to display across the entire video wall. The user can also display several windows by connecting DisplayPort signal sources to each G406. Profile Index can store and recall various settings via the front panel, IR remote control, RS232, or Ethernet.
- If the loop-out port is not attached, the user can connect to a monitor to observe the signal source.



A & B can be displayed on any monitor. Each DP input source can be displayed on two monitors. Users can display up to 6 different contents across 8 monitors. If the user adds two 2x1 HDMI SW to daisy chain signal input ports (2nd G406 HDMI input ports), the user can display up to 8 contents across 8 monitors.

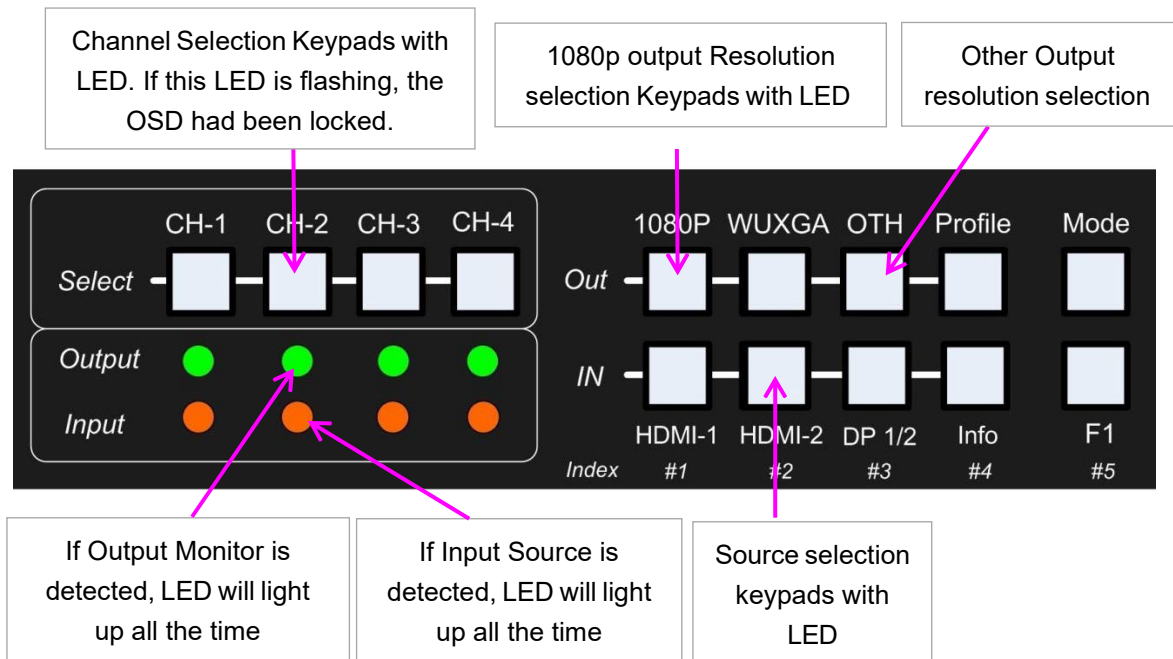
5. System Connection and Power On

- Poor quality HDMI cable and signal source will affect the connection distance and may cause signal noise or intermittent display.
- To ensure all cables are connected correctly, it is recommended to use locking cables.



- The complete video wall system should be connected to one power Distribution Box with proper grounding. Power on the system after finishing all connections to avoid system damage by floating voltage among devices.
- When power is switched on, the booting time is about 19 seconds, and the Input & Output LEDs on the front panel will stay “Lit up” for the channel with the correct input source and output monitor connections.

6. Input Source / Output Resolution Selection & LED Indicators

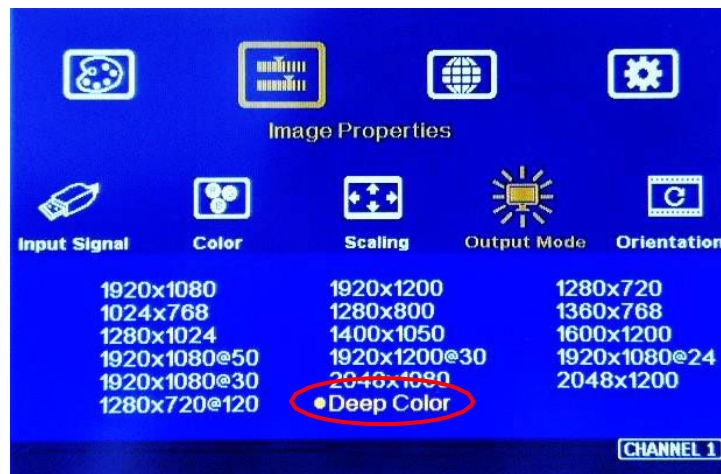


- The output resolution selection will apply to both output channels in the same Processor (CH-1/CH-2 or CH-3/CH-4). Processor-1 and Processor-2 can select different output resolutions.
- The green would light up on the keys if the output has been connected to the LCD.
- Continuous flashing in the selection key LED means the OSD function has been locked. Please press the [Menu] key for 5 seconds to disable the [OSD Locked] function. If the user sets the menu lock through the remote controller, the [INFO] key LED will be lighted. The user must press the number keys [850] to disable the menu lock.
- Output resolution list: 1024x768 60/120Hz, 1280x720, 60/120Hz, 1280x800 60/120Hz, 1280x1024 60Hz, 1360x768 60Hz, 1400x1050 60hz, 1600x1200 60Hz, 1920x1080 24/30/50/60Hz, 1920x1200, 30/60Hz, 2048x1080 60Hz, 2048x1200 60Hz & Deep Color.
- The resolution of all output is RGB 4:4:4 and progressive. If the input source and the display device support 10-bit color, the user can activate [Deep Color] to show 10-bit color. To view the input/output results, the user can press the [INFO] key.
- The user can configure EDID to instruct the input source to output the desired resolution. To output EDID resolution, the user may need to select from the PC Display Control Panel or re-boot the PC.
- Once a signal source is available, the G406 can support non-VESA standard input timing, such as 7680x1200 @30Hz or 2400x2400 @60Hz.
- When you press the [OTH] key to select the output resolution, the monitor will resynchronize the timing, and the selection will take a few seconds to complete.
- The user can obtain system information and view input/output signal resolution by pressing the [INFO] key.

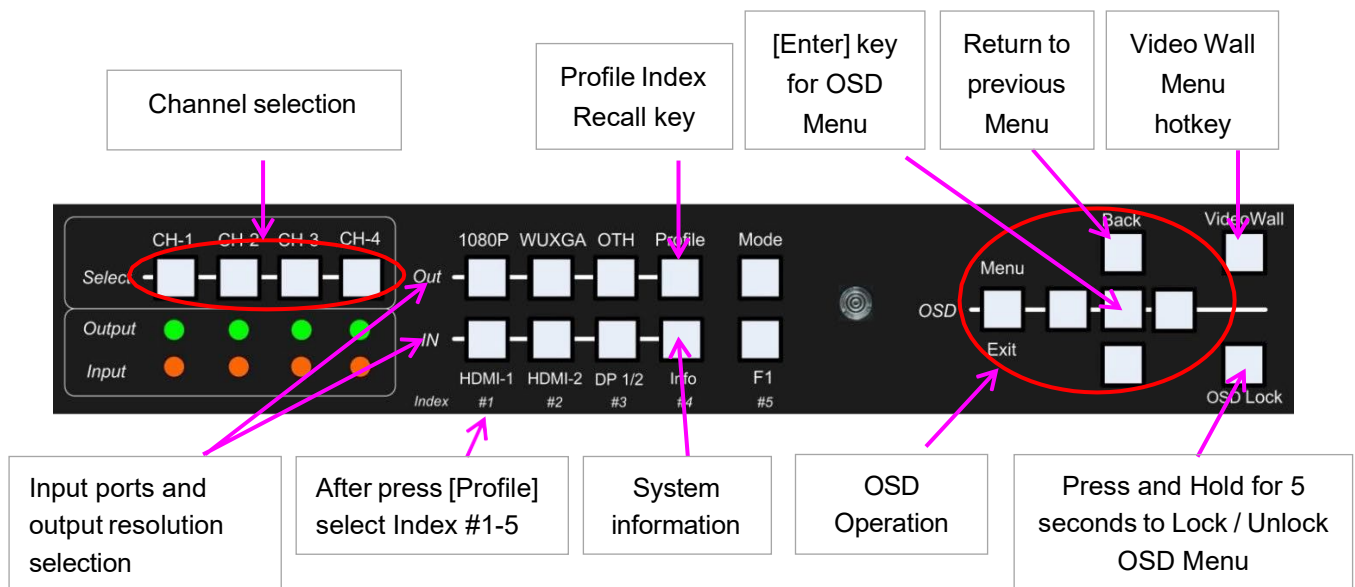
- The input refresh rate should be the same as the output refresh rate for the system to use Frame Lock to synchronize all outputs. If the input source is 50Hz and the output is 60Hz, there may be some synchronization issues between the displays.

7. Set 10-bit color output

- If the input signal is a 10-bit signal and the output display device supports 10-bit output, the user can enable 10-bit output mode via [Image Properties] [Output Mode] [ON].
- To view the input/output time result, the user can press the [INFO] key on the remote controller or the front panel keypad.
- **This setting should be executed independently by each Processor.**



8. Front Panel Keypad Operation



OSD Lock function will apply to all channels at the same time. When OSD Lock is enabled, Channel Key LED will flash. Press OSD Lock key again for 5 seconds to unlock the OSD menu.

9. Control System Settings: Box ID, RS232, Ethernet

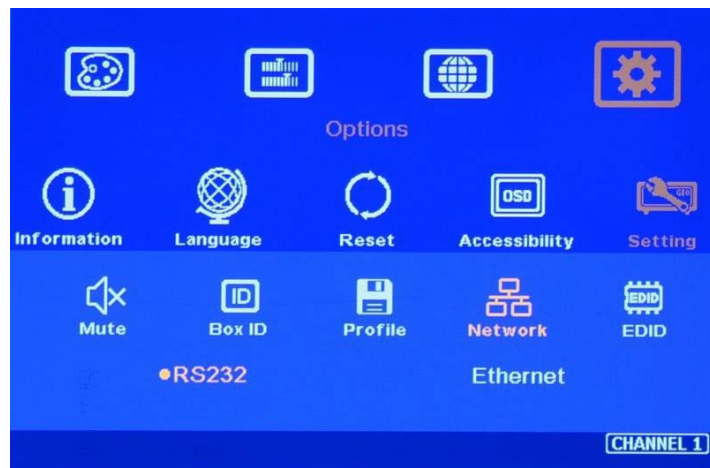
- Box ID, RS232, and Ethernet settings shall be executed through CH-1 or CH-2. Please connect CH-1 or CH-2 with the monitor if the user wants to see the system settings through OSD.
- Users can set different IP addresses in each G406 through Ethernet, USB, or remote controller so that each G406 can be controlled independently. A default IP address is 192.168.0.100.

9.1. Box ID

- The range of Box ID is 0 ~ 99 for the RS232 command.
- If the user uses a remote controller to operate the system, the Box ID range is 0 ~ 9.

9.2. RS232 settings

- RS232 is designed with a DB-9 connector. Users can select the baud rate between 11520 and 9600.
- We can provide UART protocol for the control from RS-232, USB, or Ethernet.

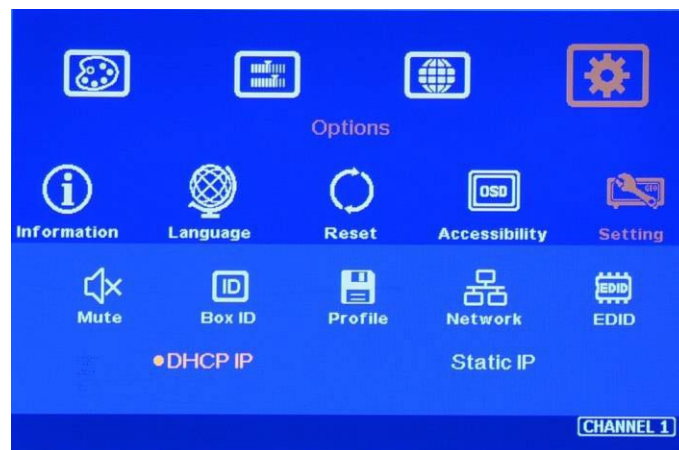


9.3. Ethernet

- The user must connect G406 to WiFi Router or switch/hub through RJ45 to the LAN port. The user can control the system through the Ethernet.
- A Crossover UTP cable can be used for direct connection between PC and GeoBox. The user must 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 G406 IP address (default is 192.168.0.100); the user can see GeoBox WebGui and a menu with virtual keys similar to OSD for further system operation. There is no additional software required.

- Users can set DHCP for the connection. Please [Renew] DHCP to get the IP address before the network connection.
- UWM is another web tool with a complete system setting and operation function. It can also update Firmware or MCU code. UWM can be downloaded from the VIGILLINK website.
- Each G406 can set a different IP address for independent operation and control.
- Please use < > OSD keys to select OSD menu items and use ^ v OSD keys to change the IP address.
- If GeoBox is connected to WiFi Router (through a LAN port), the user can control GeoBox through WiFi via PC, iPad, or mobile phone.
- The default TCP server port is 1266.

Please note: RS232 and Ethernet are available for system control. They can be used simultaneously to provide the most flexibility in system control.

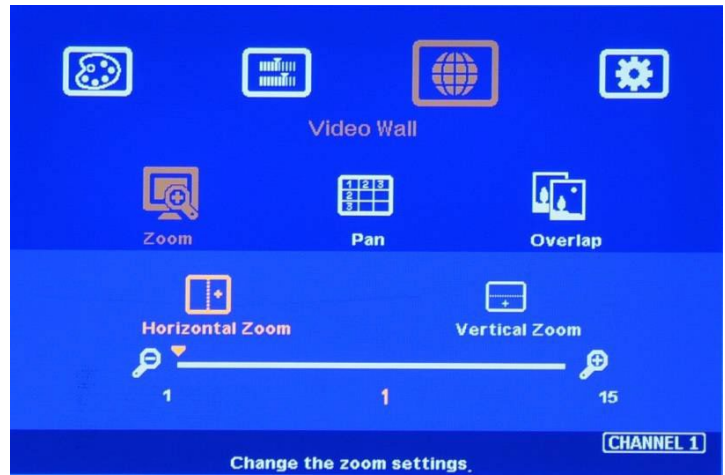


10. Video Wall Settings

- The signal source shall be connected before the video wall settings. Once the setting is finished, the setting parameters inside GeoBox will automatically change to match different input resolutions. If no signal source is connected during the video wall setting, the [Overlap] setting value may be wrong.
- Press the [Video Wall] hotkey on Front Panel or Remote Controller to activate the [Video Wall] menu. WebGui and UHD Wall Manager (UWM) PC tools are available for Ethernet configuration.
- Note: Image 90/270 flip and rotation are only available when input resolution is under 4k/2k @30Hz

10.1. [Zoom]

Use [Zoom] to split the display into horizontal and vertical directions. GeoBox can cut the image into different sections. The whole split image is 15 in both horizontal and vertical directions.



y	v	w
o		
u		

For a 3x1 video wall display

Horizontal Zoom= 3, Vertical Zoom = 1

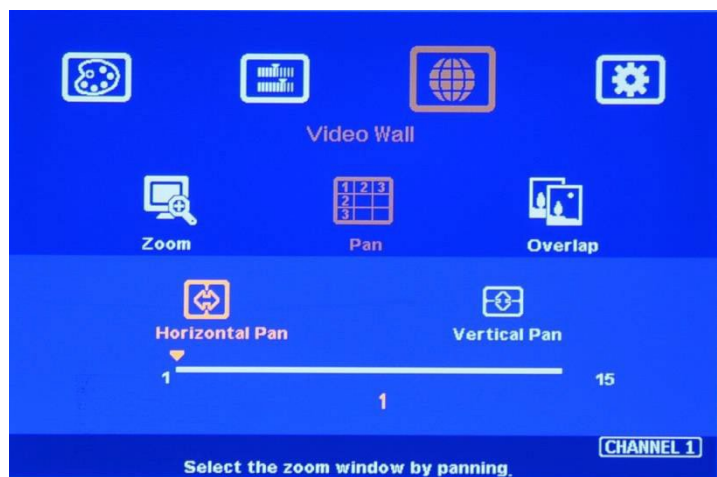
For a 3x3 video wall display

Horizontal Zoom = 3, Vertical Zoom =3

yo	v	w
u		
x	y	z
{		}

10.2. [Pan]-Assign image position

[Pan] will assign the location of each split image in the video wall in both horizontal and vertical directions. The horizontal direction is measured from Left to Right, and the Vertical direction is measured from Top to Bottom.



In the case of a 3x3 video wall display, Pan settings are as below:

u	v	w
x	y	z
{		}

For No. Monitor:

Horizontal Pan = 3

Vertical Pan = 1

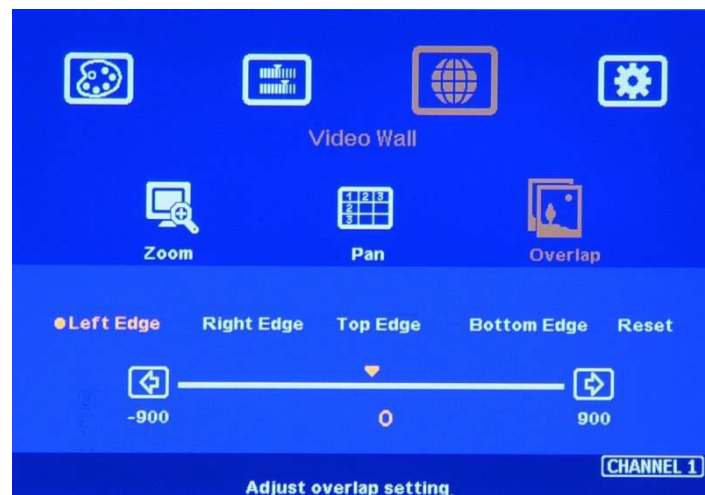
For No. Z monitor:

Horizontal Pan = 3

Vertical Pan = 2

10.3. [Overlap] – Position Alignment

[Overlap] adjustment changes the cropping area of the source image so that the image position in each monitor will be shifted. It can compensate for the Bezel Size of the monitor and correct misalignment in monitor installation. If the overlap value is decreased, each monitor will capture less image area and cause a [zoom in] (enlarged) effect. If the overlap value is increased, each monitor will capture more image area and cause a [zoom out] (shrunk) effect. Users can also use this function to correct position misalignment in installation, shift image location for irregular video walls, and set overlap areas for projector edge blending applications.



- The maximum [Overlap] adjustment value is 1800 pixels in all directions.
- Users can see the image and select Edge to adjust the [Overlap] value for Bezel compensation and to
- adjust image misalignment due to monitor installation issues.
- Users can use the [Overlap] function to stretch the image outside the video wall (some images will be missing) or draw images inside the wall with the Black blanking area at the edge. This function can adjust the content aspect ratio to meet the video wall's required aspect. Please see more details in the [Flexible Aspect Ratio Adjustment] section.
- An asymmetric video wall can be achieved through overlap adjustment, even with different sizes of monitors and bezel dimensions.

10.4. Bezel Compensation

- Through the [Overlap] menu, the user can adjust the image cropping area and adjust the image position.
- Users can apply the test pattern and reduce the [Overlap] value to enlarge the image to the bezel center line between two monitors to achieve bezel compensation.
- Users can also calculate the pixel number for bezel compensation based on the video wall dimension and size. If the video wall active display area is 360cm in width and the input source is 3840, then the pixel number for each centimeter is $3840/360=10.67$ pixel/cm. If the bezel size is 12mm on one edge, we can decrease the Overlap value to $10.67*1.2=12.8$ (13) pixels to do bezel compensation for that edge (to enlarge the image 13 pixels at that edge).

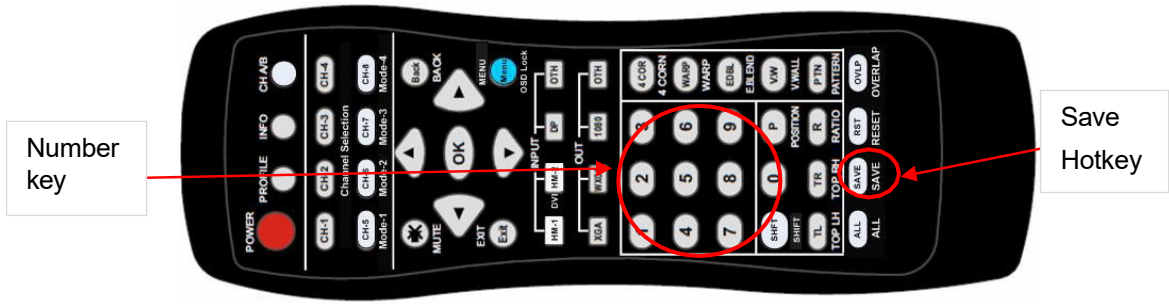
11. OSD Lock and Unlock

- Users can hold the [MENU] key on the front panel or remote controller for 5 seconds to lock OSD to prevent someone from changing the settings. After the OSD menu is locked, the user will see a flashing LED on the channel selection key on the front panel. [OSD Lock] button on the front panel will provide the same function.
- Users can hold [MENU] again for another 5 seconds to unlock OSD and do further operations.
- Users can set Box ID for each G406 and control via remote controller:
 - ✓ Press [851] · and all the box OSD will be locked except ID #1 G406. The [INFO] LED will be lighted in the locked unit, and only ID #1 G406 can be operated.
 - ✓ Press [853] · and all the box OSD will be locked except ID #3 G406. The [INFO] LED will be lighted in the locked unit, and only ID #3 G406 can be operated.
 - ✓ Press [850] · and all the box OSD will be unlocked and can be operated through the remote controller.

12. Save and Load system settings.

12.1. Save System Settings through IR remote controller and OSD Menu

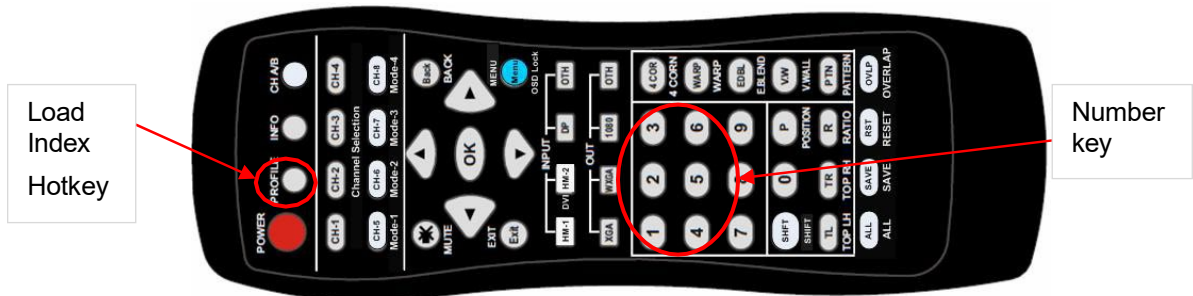
- After finishing the system settings, the user can save the setting by OSD menu through [Menu]→ [Options]→ [Setting]→ [Profile]→ [Save]→ [Index 1-5].
- [Save] Profile from the OSD menu will only take effect for one Processor (two channels). User needs to Save CH-1 / CH-2, CH-3 / CH-4, separately.
- Users can use the [Save] hotkey + Number key on the remote controller to save settings directly for all channels simultaneously. Please don't use the Direction key or enter to select Index #. Otherwise, it will save only for two channels.
- Five different display settings can be saved to [Profile]. The data stored in Profile includes EDID setting, input source, output resolution, color settings, and all user-customized settings.



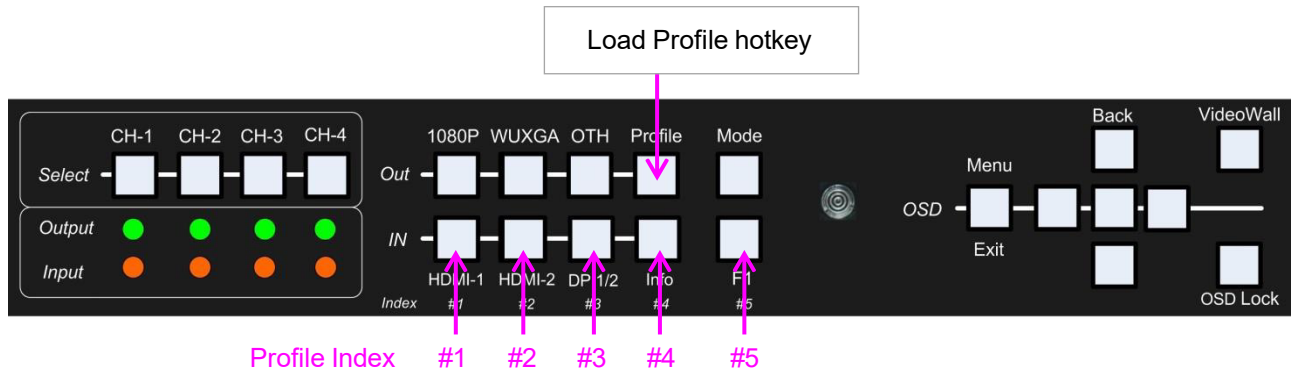
- When the user power off the system, GeoBox will keep the user setting without loss, even if the setting is not saved into Profile Index, unless someone changes the setting.
- When the system is reset from the OSD menu or updated to new Firmware, Profile data will remain inside G406.

12.2. Load Profile settings through the remote controller

- Press the [Profile] shortcut key in the remote controller → Select number keys 1-5 to recall Index 1 – Index 5. Profile Load will apply to all channels at the same time.
- Please don't use the Direction key or press Enter to select Index #. Otherwise, it will be only functional in CH1/CH2 or CH3/CH4.



12.3. Load Profile Index through Front Panel hotkeys



- Load Profile Index
- Push [Profile key] → Select Index # on Front Panel. No [Enter] is required.
- Index # keys on the front panel
- HDMI-1: Index 1, HDMI-2: Index 2, DP 1/2: Index 3, Info: Index 4, F1: Index 5
- Profile Load will apply to all channels at the same time.

12.4. Load/Save Profile Index through WebGui and UWM PC Tool

- Profile [Load] and [Save] button under the [System] menu is available to Load and Save profile settings.
- Load and save will apply to all channels at the same time.

13. System Reset

Users can reset the system through the below method:

- The small user pin to insert a RESET hole at the back panel for 5 seconds, and the user will see a [Reset to Default] message. It will apply to all channels at the same time. It will also delete the data saved in Profile Indexes.
- OSD menu to reset the system will only be functional for one Processor--two channels.
- [Reset] hotkey on the remote controller will access the RESET OSD menu directly and only reset one Processor once at a time.
- When operating through OSD or remote controller, the user can select to reset [Reset All] or only reset [Video Wall setting] setting.
- Reset through the [Reset] hole on the back panel will clean [Profile Index] neighborhoods.
- Reset through the [Reset] hotkey on the remote controller or OSD menu, [Profile Index] settings will not be deleted.

14. Irregular / Asymmetric Video Wall Settings

14.1. Introduction

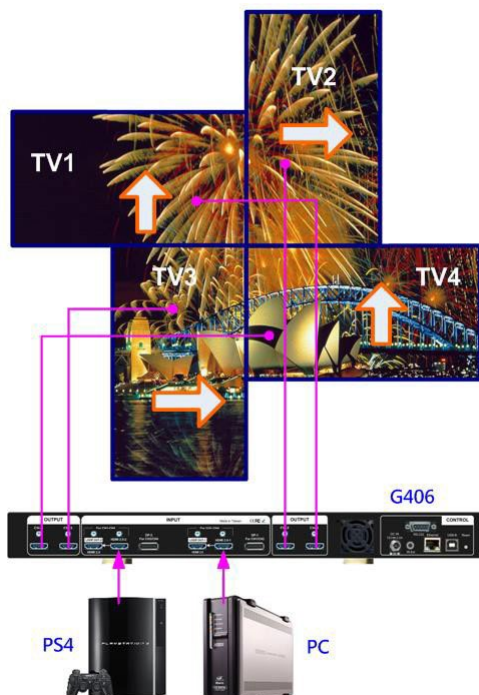
- An asymmetric video wall can be created by rotating the monitor's direction or position. Users can crop different area images for each monitor, turn image direction and adjust image position through G406 to achieve it.

Note: Image flip and rotation are only available when input resolution is under 4k/2k @30Hz.

- Users can use monitors with different dimensions, bezel sizes, and resolutions as display devices. No database for the monitor is required, allowing users to have some deviation in the installation position. GeoBox video wall settings can correct all of these factors.
- G406 can only rotate the image at 90/180/270 degrees. The monitors need to be installed in landscape or portrait position. If users want to install a monitor at other rotation angles, the G413 model should be used.

14.2. Wind-Mill Asymmetric Video Wall Setup Procedures

- **System connection (example)**



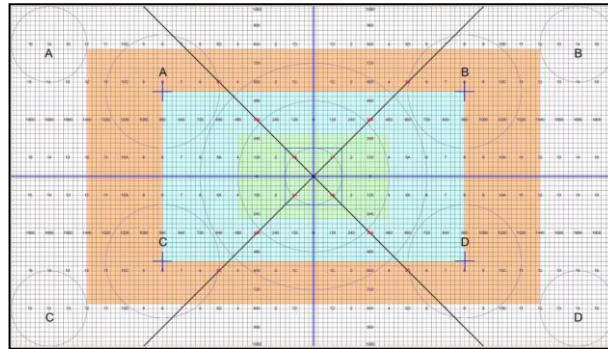
- Monitor can be different bezel size, screen dimensions, and resolution.
- All monitors can be installed at 90 / 180 / 270 degrees display direction.
- Each monitor can be connected with any output port. (In this example, CH1→ TV1, CH2→ TV2, CH3→ TV3, CH4→ TV4)
- User can select any signal source (i.e., PS4 or PC) to display on video wall.
- Able to display both signals from PS4 & PC at the same time.
- Below setup example is based on the

- **Apply the test pattern from a signal source.**

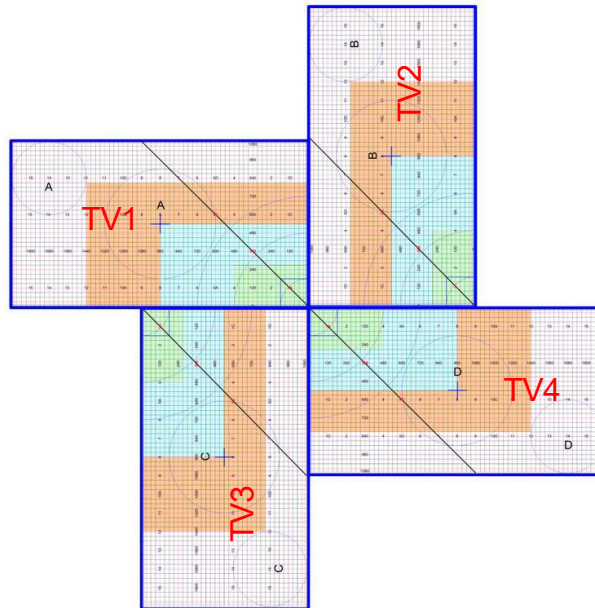
Below test pattern should be applied as a signal source for easy setup.

Users can open test patterns with "Paint" PC software (inside Windows 10) with a full-screen display to show full-screen test patterns.

Test pattern downloaded
from VIGILLINK



Test pattern
applied to video



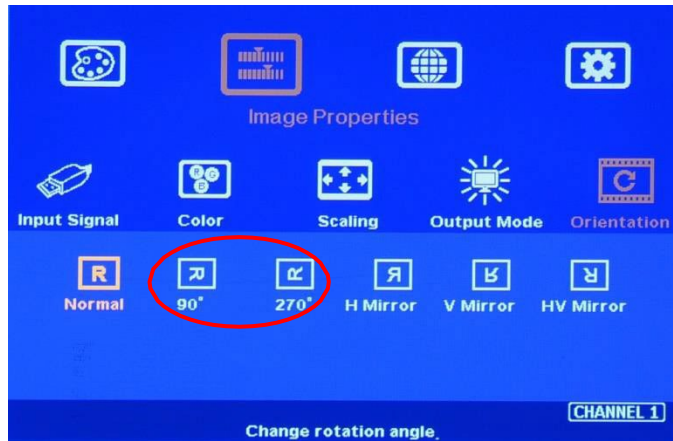
➤ **Split the content by [Zoom].**

- Set [Horizontal Zoom] =2, [Vertical Zoom] =2 in all channels.
- If TV2 & TV3 horizontal dimension is small, the user can set TV2 & TV3 [Horizontal Zoom] = 4 and [Horizontal Pan]: TV2=3, TV3=2, so that the user can reduce the image position adjustment range.

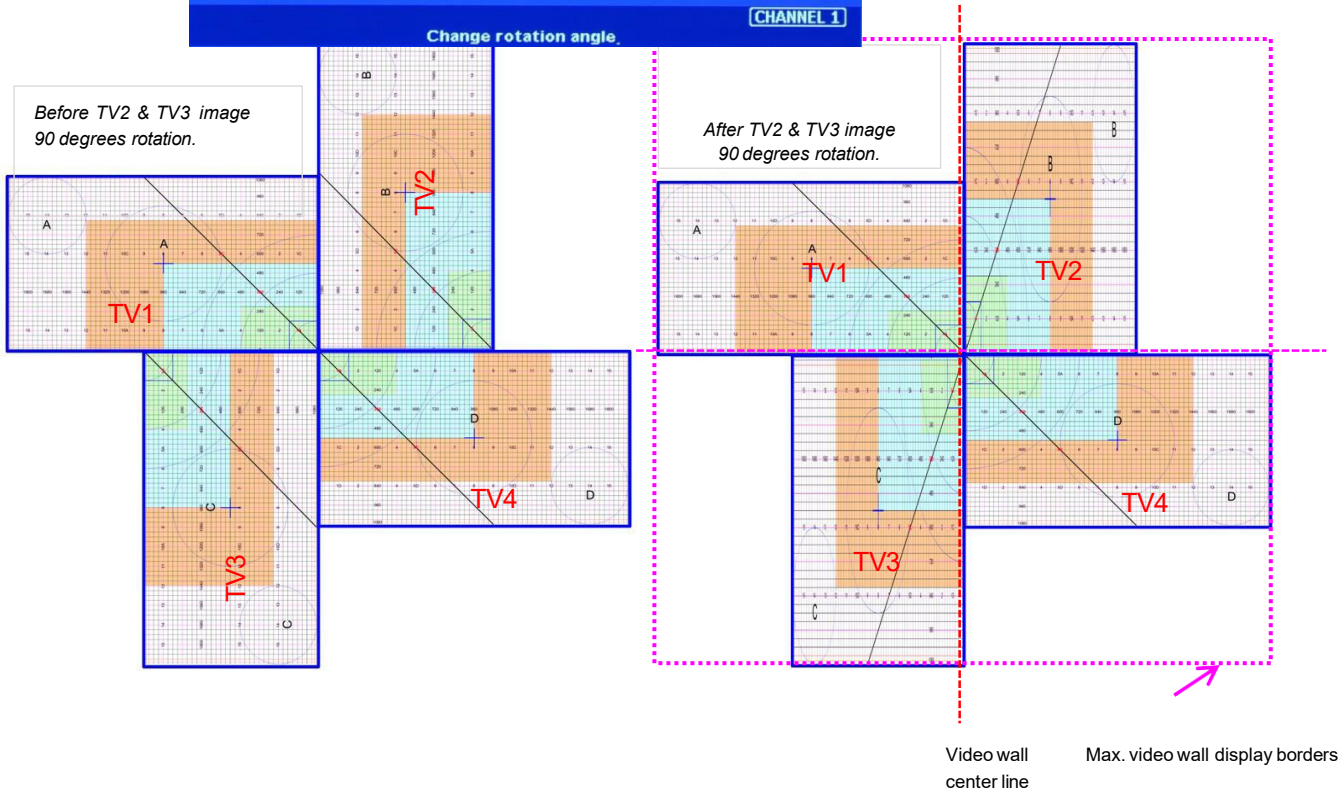
➤ **Assign image location by [Pan].**

- Set [Horizontal Pan]: TV1=1, TV2=2, TV3=1, TV4=2
- Set [Vertical Pan]: TV1=1, TV2=1, TV3=2, TV4=2

➤ **Image rotation**



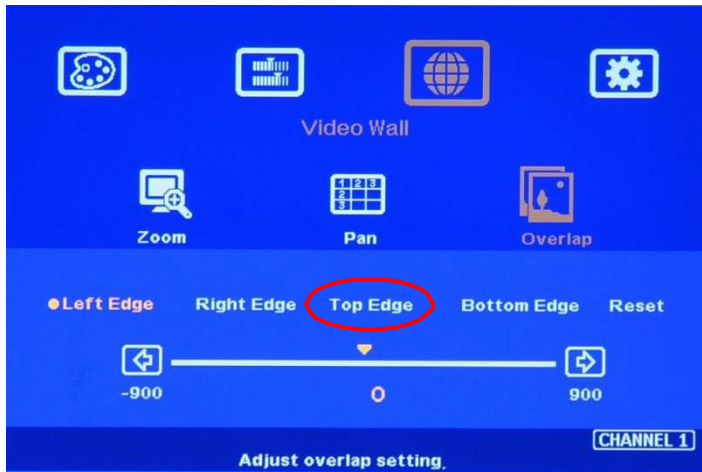
Use [Orientation] menu to rotate images in TV2 and TV3 to display the same image direction.



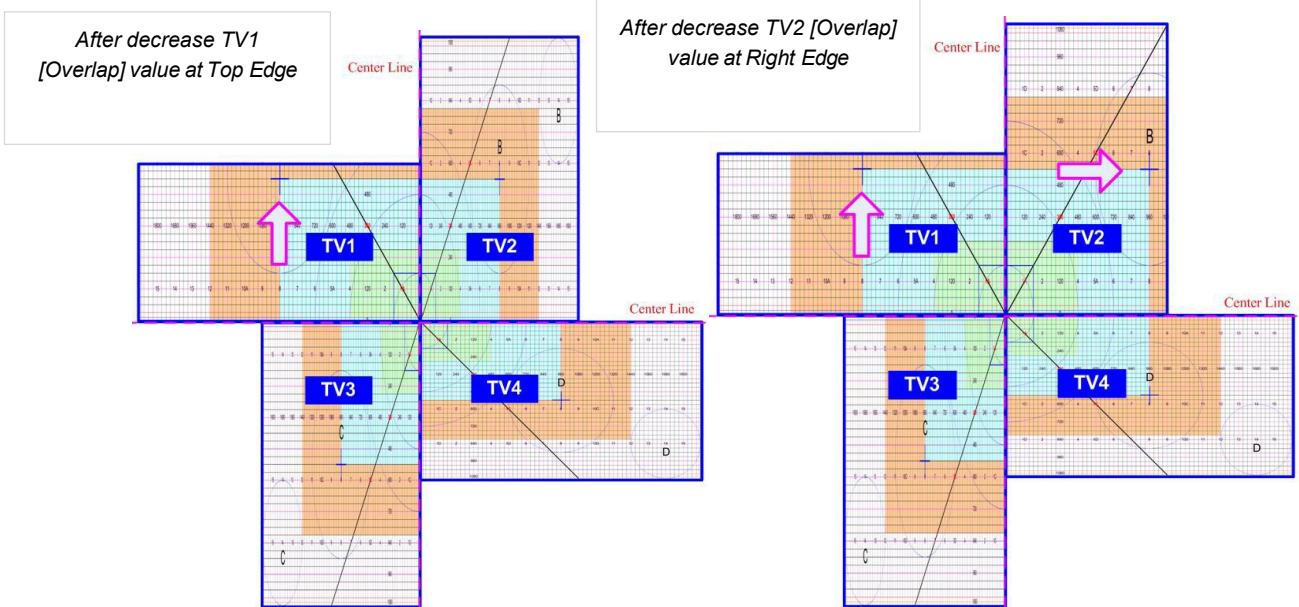
➤ **Set standard position as the reference in horizontal and vertical directions.**

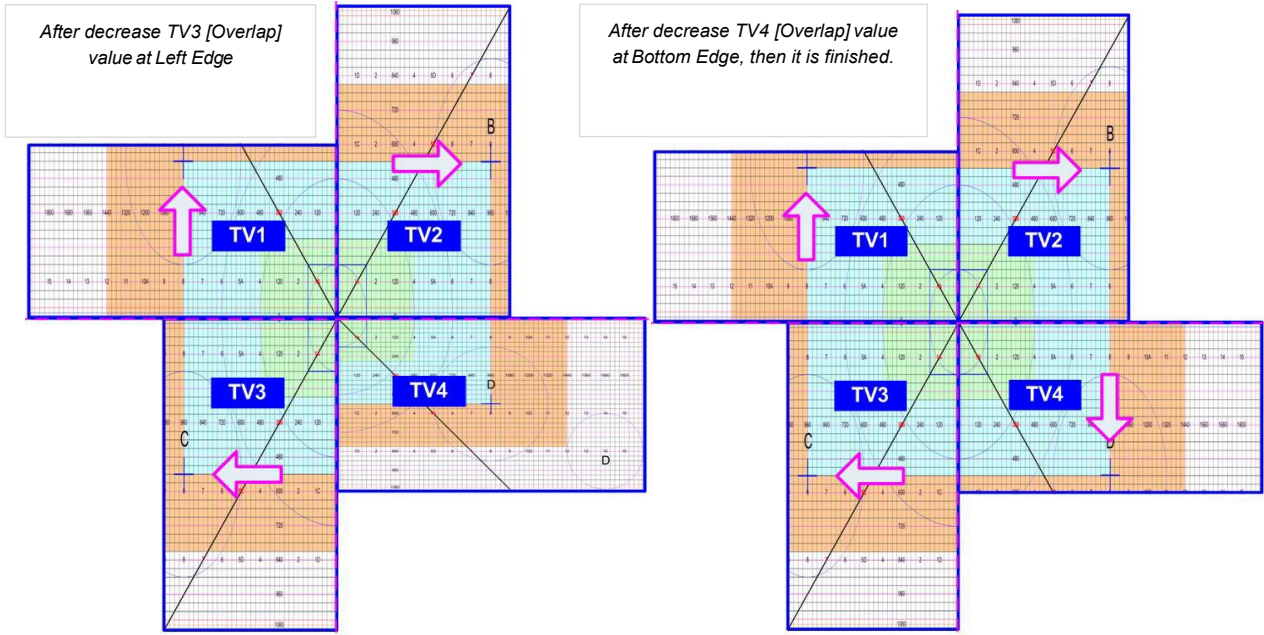
- Users should determine Horizontal & Vertical image sizes and reference positions so that all monitors have criteria for image position adjustment.
- Usually, image display borders are the maximum active display borders in the video wall.
- In the above example, the horizontal borders are decided by TV1 & TV4. Vertical edges are determined by TV2 & TV3.
- Users can decide video wall display center through a test pattern. It can be asymmetric.

➤ **Adjust image position by [Overlap] menu to finalize video wall settings.**



- 1 [Overlap] is to change image capture range.
- 2 Decrease value in Top Edge of TV1 will stretch top edge of TV1 to match image position of TV2.
- 3 For TV2 adjustment, user needs to adjust Overlap value based on the actual image direction but not based on OSD menu direction. In this example, user needs to stretch Right Edge to match TV4.



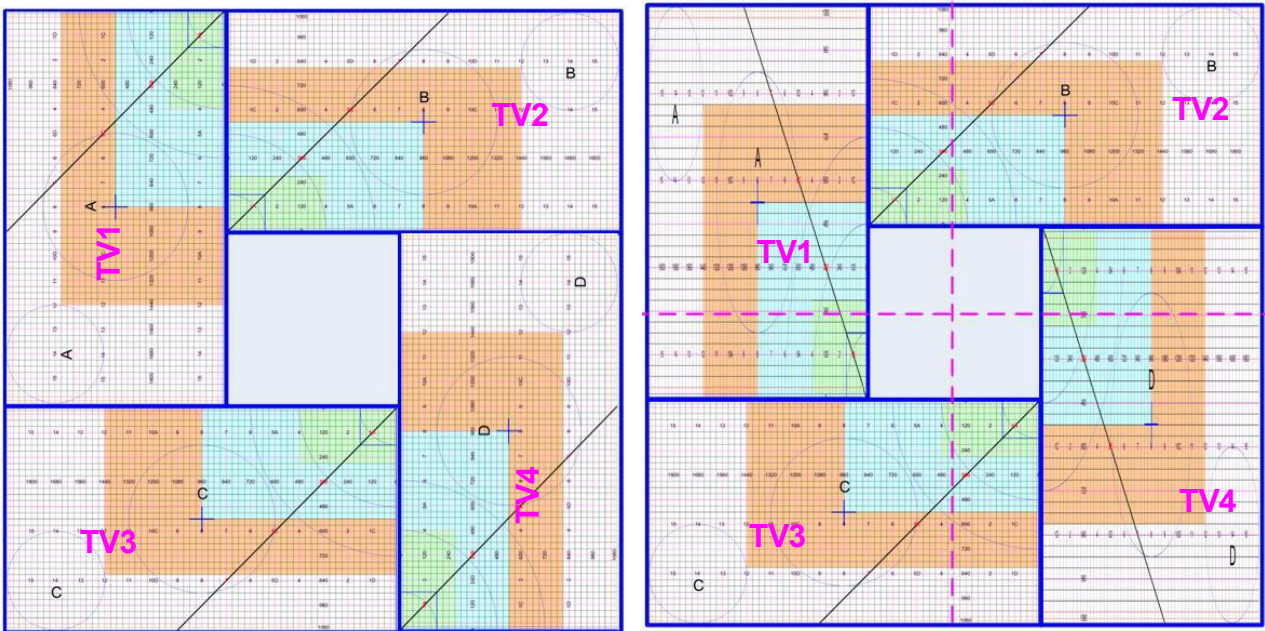


14.3. Square Asymmetric Video Wall Setup Procedures

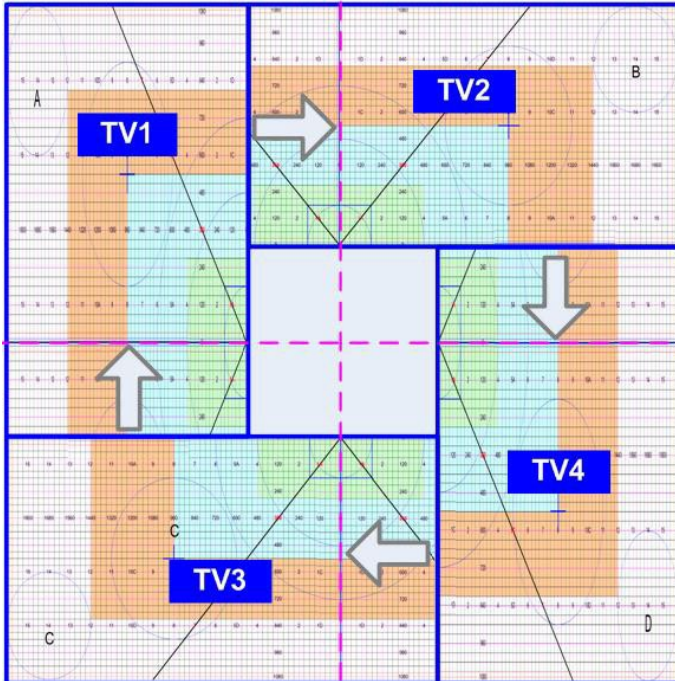
- Step 1: Video Wall settings for all channels
 [Zoom]: H=2, V=2
 [Pan]: TV1: H=1, V=1, TV2: H=2, V=1, TV3: H=1, V=2, TV4: H=2, V=2
- Step 2: Apply the Test Pattern and Rotate TV1 & TV4 images at 90 degrees.

Original Image after applied test pattern

Image after image rotation in TV1 & TV4



- Step 3: Determined image center, marked with paper tape.
- Step 4: Set standard Position Reference in horizontal and vertical directions.



- ✓ Horizontal Position Reference is determined by TV2 & TV3, and Vertical Position Reference is determined by TV1 & TV4.
- ✓ Once user can line up the image center to Video wall center H&V lines, it can serve as Position Reference lines.
- ✓ Left figure shows the result after setting Horizontal and Vertical Position Reference (Move TV1 center line up, TV2 center line to Right, TV3 center line to Left and TV4 center line to down—please see the arrow direction)

TV1: increase [Overlap] value on Bottom Edge to move the Horizontal center line up to the video wall center
 TV2: increase [Overlap] value on Left Edge to move the Vertical center line right to the video wall center.

TV3: increase [Overlap] value in Right Edge to move the Vertical center line left to the video wall center.
 TV4: increase [Overlap] value in Top Edge to the horizontal center line down to the video wall center.

- Step 5: Individual monitor position adjustment based on Horizontal and Vertical Position Reference resulting from the previous step 4.

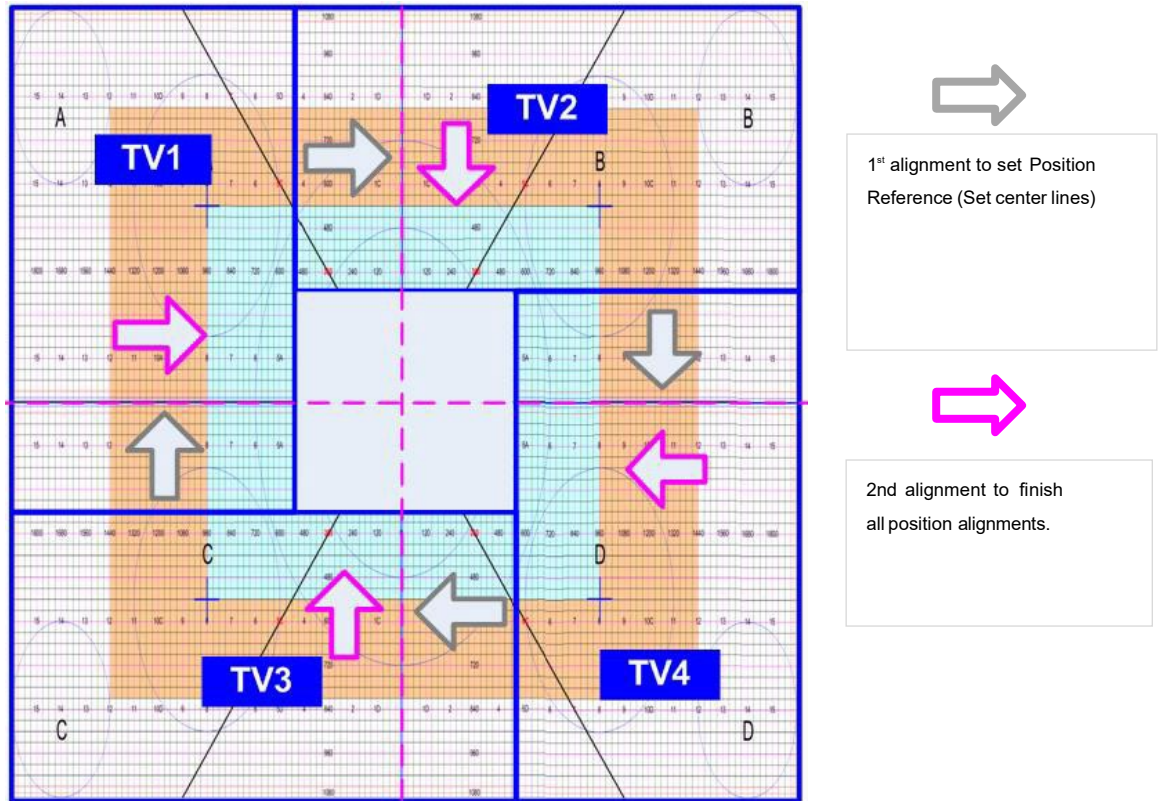
TV1: increase [Overlap] value on Left Edge and decrease [Overlap] value on Right Edge to align Vertical lines to match TV3.

TV2: increase [Overlap] value in Top Edge and decrease [Overlap] value in Bottom Edge to align Horizontal lines to match TV1.

TV3: increase [Overlap] value in Bottom Edge and decrease [Overlap] value in Top Edge to align Horizontal lines to match TV4.

TV4: increase [Overlap] value on Right Edge and decrease [Overlap] value on Left Edge to align Vertical lines to match TV2.

- Step 6: Before configuring the video wall, please connect the signal source to the HDMI input port. The setup procedure is finished.



1st alignment to set Position Reference (Set center lines)

2nd alignment to finish all position alignments.

14.4. Aspect Ratio and image distortion

- If the source content aspect ratio is not 1:1 in this Video Wall setting, the final image will have some distortion.
- Users can adjust source resolution and content aspect ratio to fix this issue.
 - ✓ Set display EDID with 2160*2160 with the same ratio as the aspect ratio of the Video Wall.
 - ✓ Use PC as signal source with 2160*2160 output resolution and use content with 1:1 aspect ratio. Customized output resolution settings in the PC may be required.
- Users can also provide 1:1 aspect ratio content and set the PC with 4k/2k output resolution with a full-screen display in PC output. Users will also see no distortion in the image.
- Suppose source resolution and content don't match the above conditions. In that case, users can adjust the display aspect ratio in video wall settings to reduce image distortion, but it may have below issues:
 - ✓ With some blank areas at some borders.
 - ✓ Display with full screen, but some images will be stretched outside display borders and can't be seen.
- If the user wants to change the video wall display image aspect ratio, the user needs to adjust the Position Reference Line first. In this example, if the user wants to stretch the horizontal image, the user needs to change TV3 and TV2 horizontal scaling factor first (grid size), then align TV1 and TV4 to match TV3 and TV2 with a test pattern.

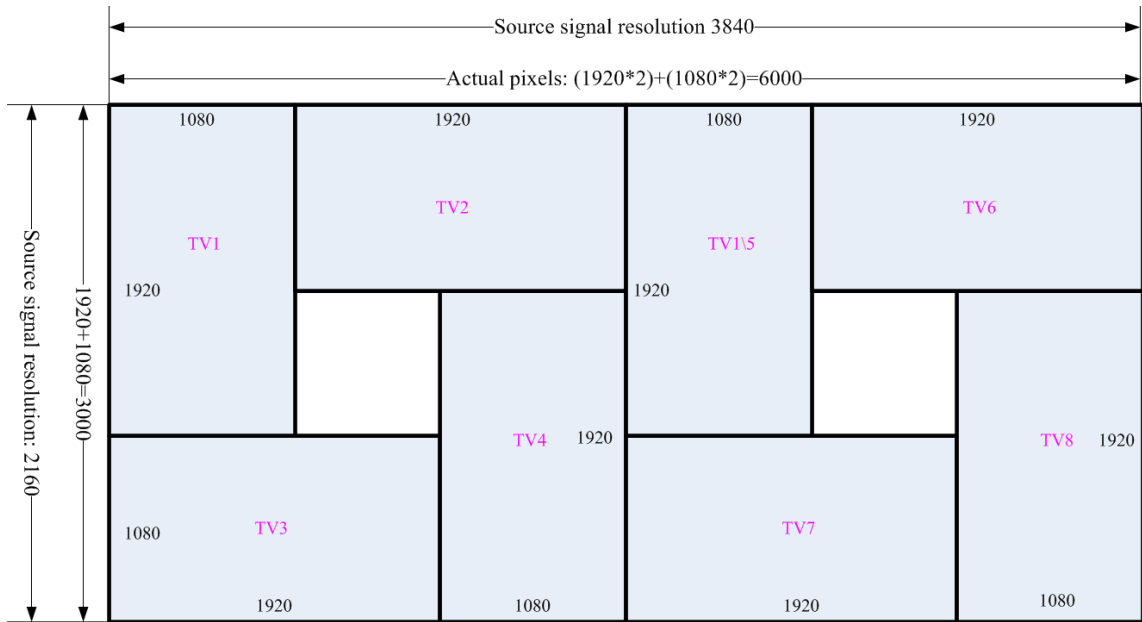
14.5. Other Big-Scale Asymmetric Video Wall

If a video wall necessitates the usage of many controllers, users have two options:

- A. To adjust the image directly through remote control and test pattern
 - To apply test patterns and become familiar with test patterns and related positions.
 - To execute [Zoom], [Pan], and image rotation settings.
 - After the individual LCD image location is determined, you can use the remote control to adjust the image location according to the test pattern.
 - The general adjustment order is first from the video wall center and outer edges. If you can adjust the grid size in horizontal and vertical directions in some monitors as reference baselines, then all other monitors can be adjusted according to these baselines.
- B. The second way is to do position measurements for each monitor according to the design drawing or picture and use remote control and test patterns to input adjusting parameters directly.
 - The first step is to measure the H&V active display area dimensions of the complete video wall setup, for example, 400cm X 180cm.
 - Determine the signal source resolution: For example, 3840*2160.
 - Calculate the desired display pixel per centimeter: horizontal: $3840/400=9.6$ pixels/cm, vertical: $2160/180= 12$ pixels/cm
 - Based on the monitor layout, execute [Zoom] and [Pan] and rotate the image if necessary.
 - When the image position of an individual LCD is determined, the user needs to measure the distance between the corner position of an active display area in each monitor and the image location determined by the [Zoom] and [Pan].
 - You can calculate the approximate horizontal and vertical position adjustment pixels using these distances and pixel densities per centimeter.
 - The remote control adjusts the image position directly according to the computed value and the test pattern.

Example of an irregular TV wall setting with 8 monitors

- The actual physical pixel on the upper edge display is: 6000. If the 3840*2160 signal source is used, the signal source pixel on the upper edge is 3840. The actual ratio is $6000/3840=1.5625$. The actual vertical ratio of the $3000/2160=1.3889$
- When a user executes Video Wall [Overlap] setting, it adjusts the cropping area of the signal source and changes the image position accordingly.



a. TV1 settings:

- [Zoom]: H=6, V=2, [Pan]: H=1, V=1, [Image orientation]: 90 degrees or 270 degrees.
- When TV1 horizontal zoom is 6, the actual hardware pixel in each horizontal section is $6000/6=1000$. TV1 's vertical zoom is $v=2$, and the actual hardware pixel in each vertical section is $3000/2=1500$
- The horizontal edge of TV1 should be assigned 1080 pixels, but the [Zoom] setting only gives 1000 pixels to TV1. It is necessary to use the [overlap] adjustment function to add 80 pixels to the TV1. After converting to the signal source pixel, the TV1 [Overlap], →[Right Edge] adjustment value should be $80/1.5625=51.2$ Pixel (+51).
- The vertical edge should be assigned with 1920 pixels, but the [Zoom] setting assigns $3000/2=1500$ pixels to TV1. It is necessary to use the [overlap] adjustment function to add $1920-1500=420$ pixels to TV1. After converting to signal source pixel, TV2 [Overlap], →[Bottom Edge] overlap adjustment value is $420/1.3889=302.4$ Pixel (+302).

b. TV2 settings:

- [Zoom]: H=4, V=2, [Pan]: H=2, V=1
- When the TV2 horizontal zoom is 4, the actual hardware pixel in each horizontal section is $6000/4=1500$. TV2 's vertical zoom is $V=2$, and the actual hardware pixel in each vertical section is $3000/2=1500$
- The horizontal edge of TV2 should be assigned 1920 pixels, but the [Zoom] setting only assigns 1500 pixels to TV2. It is necessary to use the [overlap] adjustment function to add 420 pixels to the TV2. After converting to the signal source pixel, the TV2 [Overlap], →[Right Edge] adjustment value should be $420/1.5625=268.2$ Pixel (+268).

- The vertical edge should be assigned 1080 pixels, but the [Zoom] setting only assigns 3000/2=1500 pixels to TV2. It is necessary to use the [overlap] adjustment function to decrease.
1500-1080=420 pixel to TV2. After converting to signal source pixel, TV2 [Overlap], →[Bottom Edge] overlap adjustment value is 420/ 1.3889=302.4 Pixel (-302).

c. TV3-TV8 settings:

- Below is [Overlap] adjusting value for each monitor without considering bezel compensation.

Monitor	Zoom		Pan		Overlap			
	H	V	H	V	LH	RH	Top	Bottom
TV1	6	2	1	1	0	51	0	302
TV2	4	2	2	1	268	0	0	-302
TV3	4	2	1	2	0	268	-302	0
TV4	6	2	3	2	51	0	302	0
TV5	6	2	4	1	0	51	0	302-13
TV6	4	2	4	1	268	0	0	-302
TV7	4	2	3	2	0	268	-302	0
TV8	6	2	6	2	51	0	302	0

- If bezel compensation is required, a user needs to enlarge the image in each monitor to the center line between two monitors (some images will disappear). Assume the bezel size is 10mm and the

The monitor is 42" (active display area is 930*523mm) .

- ✓ Horizontal pixel density: $3840 / (930*2+523*2+10*6) = 1.295 / \text{mm}$
- ✓ The pixel inside the bezel is $1.295*1=13$ pixels

- [Overlap] value after considering bezel compensation:

Monitor	Zoom		Pan		Overlap			
	H	V	H	V	LH	RH	Top	Bottom
TV1	6	2	1	1	0	51-13	0	302-13
TV2	4	2	2	1	268-13	0-13	0	-302-13
TV3	4	2	1	2	0	268-13	-302-13	0
TV4	6	2	3	2	51-13	0-13	302-13	0
TV5	6	2	4	1	0-13	51-13	0	302-13
TV6	4	2	4	1	268-13	0	0	-302-13
TV7	4	2	3	2	0-13	268-13	-302-13	0
TV8	6	2	6	2	51-13	0	302-13	0



Monitor	Zoom		Pan		Overlap			
	H	V	H	V	LH	RH	Top	Bottom
TV1	6	2	1	1	0.00	38.00	0.00	289.00
TV2	4	2	2	1	255.00	(13.00)	0.00	(315.00)
TV3	4	2	1	2	0.00	255.00	(315.00)	0.00
TV4	6	2	3	2	38.00	(13.00)	289.00	0.00
TV5	6	2	4	1	(13.00)	38.00	0.00	289.00
TV6	4	2	4	1	255.00	0.00	0.00	(315.00)
TV7	4	2	3	2	(13.00)	255.00	(315.00)	0.00
TV8	6	2	6	2	38.00	0.00	289.00	0.00



Two G406 can build TV wall as Left.

More irregular video wall example

- a. **Method 1: Calculate [Overlap] adjustment pixels based on the design drawing or installation picture.**



- Users can draw an outer frame in the display area using a photo or project drawing.
- Measure the outer frame's vertical and horizontal dimensions and divide the signal source's resolution by the horizontal and vertical outer frame dimensions to get the H&V pixel density per centimeter.
- Measure the distance of the display area in each monitor in both horizontal and vertical positions.
- The user can calculate the pixels for position adjustment using the position distance and pixel density.
- When the user sets [Zoom] and [Pan] for each monitor, the user can also understand the TV wall-cutting position.
- Using the above information, the user can calculate the [Overlap] adjustment value. After finishing the [Overlap] adjustment, the user can apply the test pattern and execute the position fine-tuning.

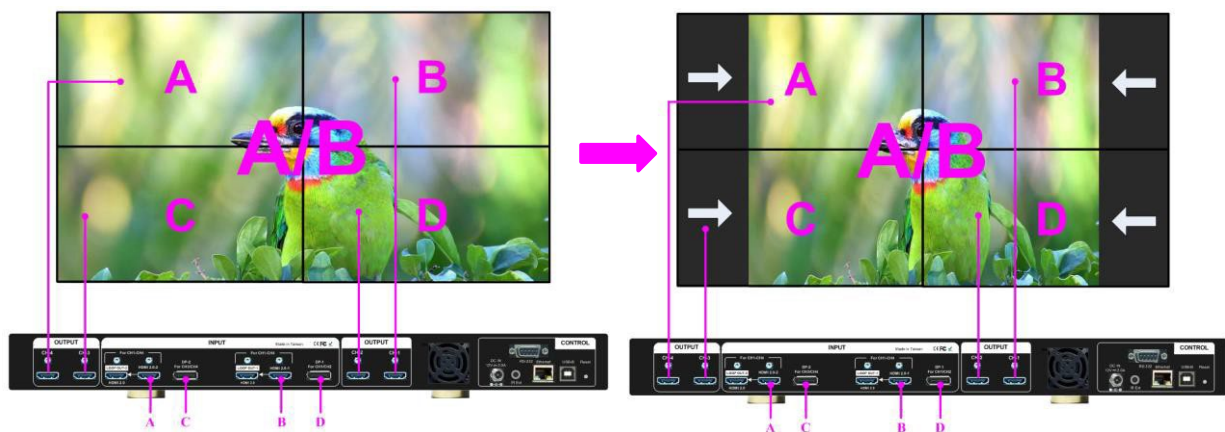
- b. **Method 2: Apply the test pattern and execute image position adjustment directly.**

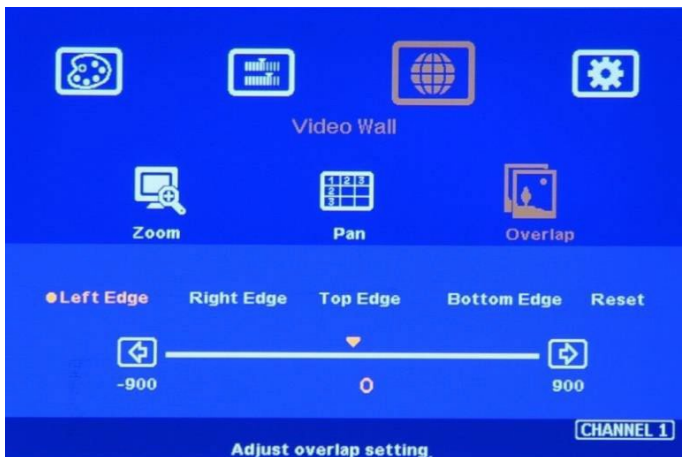
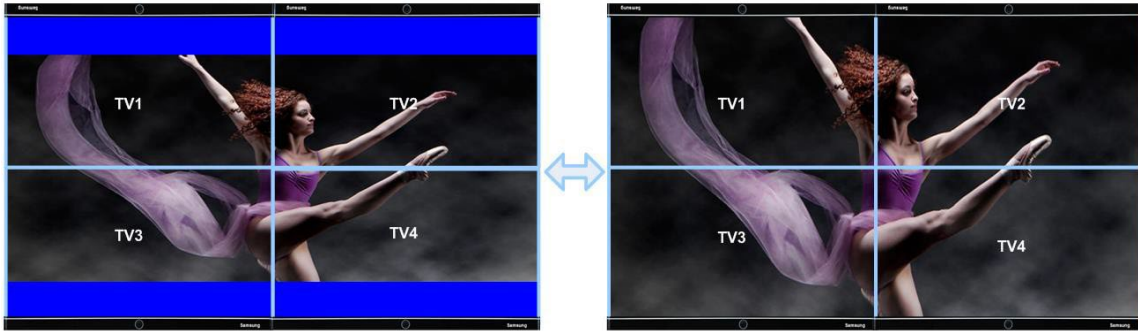
- Users can also align the image directly using the test pattern.
- The image center point is estimated and marked.
- Take the middle monitor TV1 as an example:
 - ✓ The center point of the TV wall is in the upper position of TV1.

- ✓ Rotate the image, set [Zoom] as H=5 (about 1/5 in the horizontal direction), V=2 (approximately 1/2 in the vertical position), [Pan]: H=3 (in the 3rd position while H= 5), V=2 (vertical 2nd position).
- ✓ Apply the test pattern, then select the TV1 connection channel.
- ✓ Use the [Overlap] menu to select the top/bottom edge to adjust the vertical position of the test pattern and allow the test pattern's central point to match the TV wall center point.
- ✓ Then adjust the left and right edge [Overlap] values so that the horizontal and vertical grids have similar sizes.
- ✓ Next step is to set TV2/TV3 [Zoom] and [Pan]: set [Zoom]: H=3 (about 1/3 of the horizontal direction), V =4 (approximately 1/4 of the vertical position). TV2 [Pan]: H=1 (1st position of horizontal direction), V=3 (3rd position of vertical direction); TV3 [Pan]: H=3 (the 3rd position of horizontal direction), V=3 (3rd position of vertical direction) and uses [Overlap] function to let the test pattern align together. If some images are missing or have black borders on both sides, the user can shrink/enlarge the TV1/TV2/TV3 grid size so that the grid can cover the full frame of the TV wall with a similar horizontal grid size in all TV.
- ✓ The other three upper monitors can be set similarly to align the test pattern. The grid size can be consistent with the other three monitors in vertical and horizontal directions.
- ✓ If necessary, image fine-tuning is required to complete the whole setup.

15. Flexible Aspect Ratio Adjustment

Users can change the image's aspect ratio with black borders (increase overlap value) or stretch the image (decrease overlap value) in a specific direction to compensate for the aspect ratio difference between the video wall and the content. The Maximum adjustment range is 1800 pixels on each edge.





Activate [Overlap] under [Video Wall] menu.

1. User can select the channel and the edge required for edge shift, then adjust Overlap value to see aspect ratio change.
2. The image position shift range is +_1800 pixels in each edge.

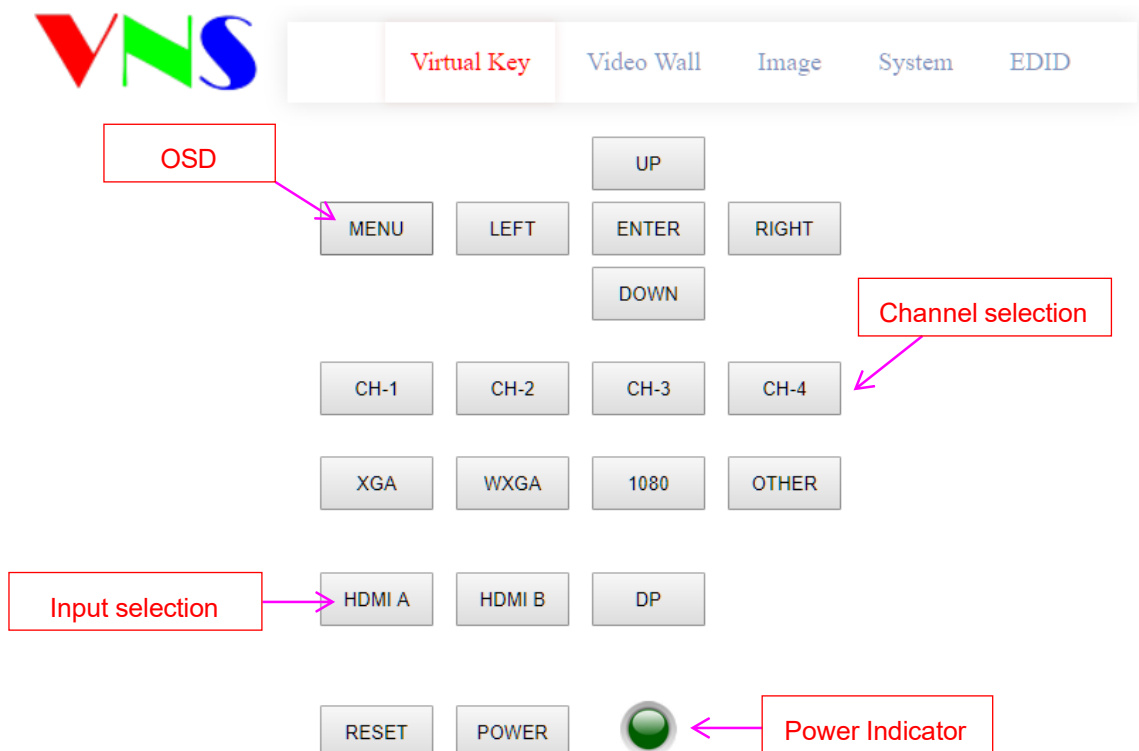
- If the image is in portrait position, this function is only available under input signal up to 4k/2k @30Hz.
- If Video Wall [Zoom] is set to H=2 & V=2 or above, the user can apply 4k/2k @60Hz input signal. The adjustment range (1800 pixels) is calculated based on the signal source resolution.
- When the user adjusts the Overlap value in one monitor, it will also change the scaling factor. The user needs to adjust the Overlap value in other monitors to give all monitors the same scaling factor.
- **The** adjustment range of 1800 pixels is calculated according to the signal source resolution. Suppose the signal source is 1080p, and the adjustment value is 450 pixels when switching to a 4k/2k input signal. In that case, the adjustment value will automatically be converted to 900 pixels to maintain the same image position. **Suppose the input signal source is 1080p and the adjustment value is 1800 pixels (maximum) when switching to the 4k/2k input signal. In that case, the adjustment value will be kept at 1800 pixels (it should be double, but the maximum is only up to 1800 pixels), and the image position will not be the same as 1080p.**

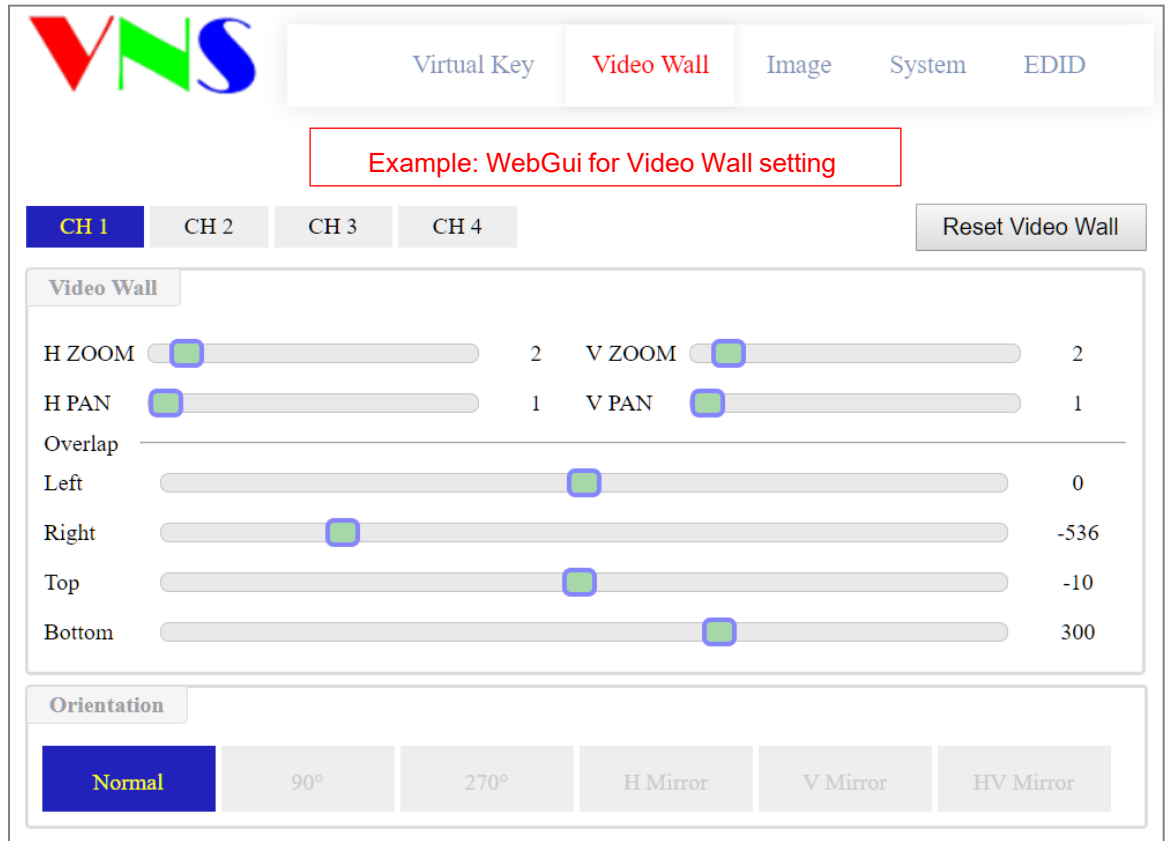
16. PC tool

- Each G406 has an independent IP address. The default IP address is 192.168.0.100. Users can set different IP addresses in each G406 and control multiple units of G406 at the same time.
- Two PC tool is available for the control of GeoBox:
 - ✓ WebGui: embedded inside G406. No additional software is required.
 - ✓ UHD Wall Manager (UWM): HID PC tool can be used through USB or Ethernet connection without an installation process.

16.1. WebGui

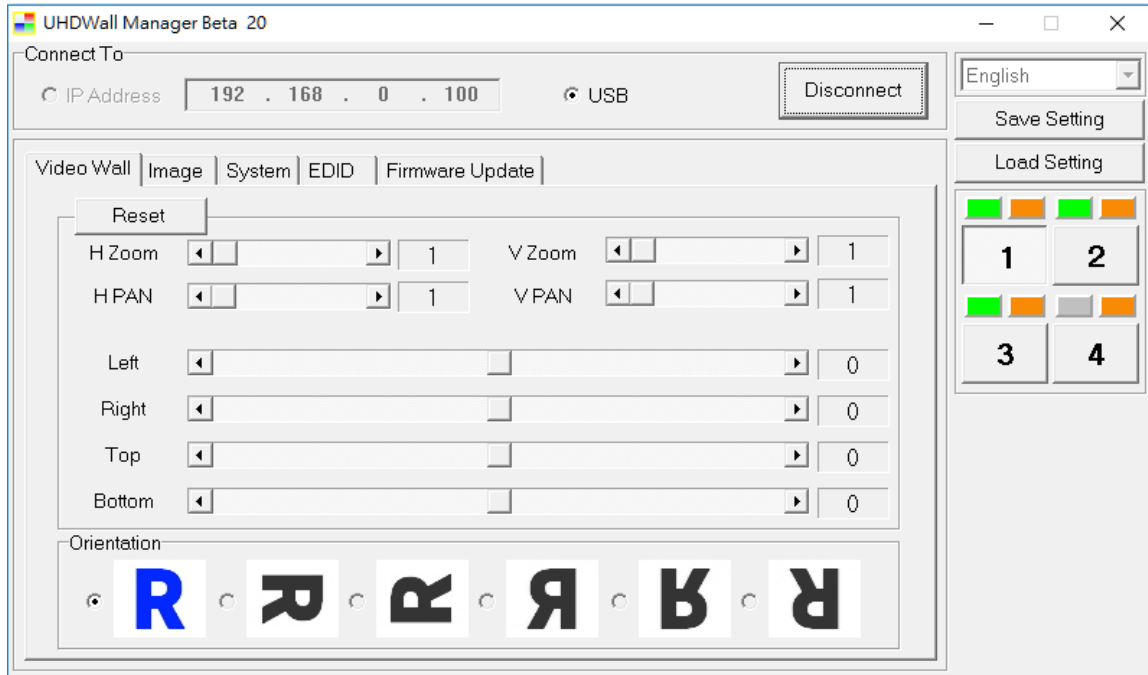
- WebGui is embedded inside G406. Once the user connects G406 with PC through Ethernet, the user can access WebGui and execute all operations like the OSD menu through Virtual Keys and OSD Menu. No PC or appropriate software tool is required.
- Users can turn on/off the system through WebGui and see the status through the power indicator.
- WebGui can be controlled through mobile phones. Please note that iPhones may have different behavior and cause some mistakes.
- In WebGui operation, the icon in the slide bar may need to move to the middle point to take effect.





16.2. UHD Wall Manager (UWM) PC Tool

- UWM Manager is a PC tool executed through a PC. Users need to download this tool from the VIGILLINK website. Once the user connects G406 with PC through Ethernet or USB and opens UWM Manager, the user can access UWM and execute all operations like the OSD menu through the PC keyboard and mouse. Users can back up the system setting on the PC and restore/copy to other units.
- UWM is for system setup and can't return the settings parameters from GeoBox.
- UWM PC tool is designed for G400 series products. If the user connects with G408, the user will see 8 channels for selection instead of 4 channels.
- Users can execute full operation functions and update Firmware and MCU code through UWM. Users can control multiple units at the same time by changing IP addresses.



The color icons on the top of the CH indicator show the system connection status. Green indicates that the channel has connected with a display device, and Yellow indicates that the input signal is connected. In the above example, the channel 4 outputs are not connected to the monitor.

17. System Structure and Operation behavior

Please see the detailed block diagram of G406 on page 6.

17.1. System Structure: Processor-1 & Processor-2

- G406 can be treated as one quad-channel processor or two dual-channel processors. Channel 1/2 is called Processor-1, and channel 3/4 is called Processor-2.
- HDMI-1 & HDMI-2 input signals can be connected to Processor-1 & Processor-2.
- DP1 is solely for Processor-1, and DP2 is solely for Processor-2.

17.2. OSD Command Execution in all channels

- The following command will be applied to all channels at the same time.
 - [Profile]→ [Load]→ [Index]
 - [Options]→ [Setting]→ [Box ID]: one G406 has one Box ID and can only be set by CH1 or CH2.
 - [Options]→ [Setting]→ [Mute]
 - [Options]→ [Setting]→ [Network]: one G406 has one Network setting and can only be set by CH1 or CH2.
- The following commands will be applied to each Processor separately. The commands will apply to two channels inside the same Processor.
 - [Image Properties]→ [Scaling]: select the entire screen or original aspect ratio.

- [Image Properties]→ [Output Mode]: select output resolution & set 10-bit output mode.
- [Options]→ [Information]: show system information.
- [Options]→ [Language]: Select OSD language.
- [Options]→ [Reset]
- [Options]→ [Accessibility]→ [OSD Time Out]
- [Options]→ [Accessibility]→ [Logo Time Out]
- [Options]→ [Accessibility]→ [Standby Time]
- [Options]→ [Accessibility]→ [Black Screen]
- [Options]→ [Setting]→ [Mute]
- [Options]→ [DVI Output]
- [Options]→ [Frame Sync]
- [Options]→ [Setting]→ [Profile]→ [Save]
- [Options]→ [Setting]→ [Profile]→ [Load]: If through below OSD operation ([Menu]→ [Setting]→ [Profile]→ [Load]), the result will apply to CH1/2 or CH3/4 but not all channels. If via [Profile] hotkey on the front panel or remote controller to Load Index, the result will apply to all channels simultaneously.
- The following commands will be applied to each channel independently.
 - Color adjustment: All menus under [Picture]
 - [Image Properties]→ [Color]
 - [Image Properties]→ [Input Signal]

DP-1 is for CH1/CH2, and DP-2 is for CH3/CH4. Each Processor can't select HDMI-1 & HDMI-2 at the same time. Please see Section 2 for more details.

 - [Image Properties]→ [Orientation]

18. Miscellaneous features

18.1. EDID Setting

- [Options]→ [Setting]→ [EDID]. [Customize] EDID is in the selection list. The range is H= 1024~3860, V= 720~2400.
- HDMI-1 & HDMI-2: select CH1 or CH2 with HDMI input, then set EDID
- DP1 & DP2: select CH1 or CH2 with DP1 input to set DP1 EDID. Select CH3 or CH4 with DP2 input to set EDID.
- Users can set EDID directly through WebGui and UWM by selecting the input port.

18.2. HDMI vs. DVI Output Signal

HDMI digital signal is compatible with a DVI signal. Most of the display devices can support both digital signals. Some old equipment may have less flexibility in digital signal compatibility. In this case, the user may need to select the DVI output format for standard display. Each Processor shall be set separately.

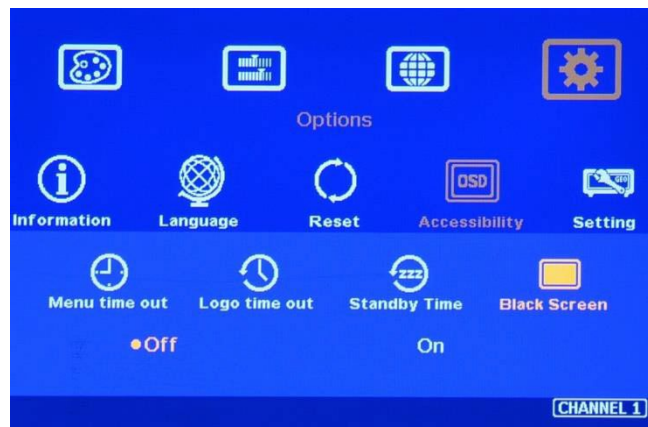


18.3. System Standby and Automatically Turn Off Output Signal

- [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 G406 will also terminate at the same time. If G406 detects the input signal again (hot plug 5V signal), it will automatically turn on the system again.
- 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.

18.4. Change the Background Color

When there is no signal input, the system will show blue color background with a [Power Saving Mode] message on the screen. Users can change the background color to black from the OSD menu below.



18.5. Change OSD Menu display time

Users can set [Options]→ [Accessibility]→ [Menu time out]→ [0] to display the OSD menu all the time. Each Processor shall be set separately.

18.6. Change Splash screen logo display time

Users can set [Options]→ [Accessibility]→ [Logo time out]→ [0] to eliminate the splash screen Logo. Each Processor shall be set separately.

19. Helpful tips for video wall settings

- Image distortion and aspect ratio issues
If the content aspect ratio differs from the video wall, it will cause image distortion. Users can adjust the aspect ratio through [Overlap] settings. However, you will have two choices:
 - ✓ Full-screen display, but some content will be drawn to the outside border and missing.
 - ✓ Draw the image into the video wall and keep blank borders at some edges.
- If the signal is from the PC, the user can set customized EDID in GeoBox to let the PC output the expected output resolution. Some PC may not follow the GeoBox EDID resolution setting and require customized output settings from the display card or a reboot of the PC system.
- Users can set different video wall settings in each channel and crop different areas for the display. Combined with ZOOM, PAN, and OVERLAP settings, the user can crop any location of the image for each LCD, whether it is in landscape or portrait position.
- Pay attention to image rotation limitations in input signal resolution. G406 doesn't have a 90/270 image rotation function when the input is 4k/60 Hz.
- Please apply the signal source before the video wall setting. Otherwise, the settings may need to be corrected.
- G406 can support an interlaced signal source (i.e., 1080i). However, if the user rotates or flips the image, there will be no 3D motion adaptive de-interlaced function. Users may see small flick images while the input is still an image. We recommend applying a progressive signal for the best video quality.
- Some media players will output maximum resolution when it is powered on each time but do not follow the EDID settings in the sink device. It will cause an abnormal display in the video wall if this video wall has an image rotation setting and the signal source resolution is more than 4k/60Hz because G406 can only support image rotation under 4k/30Hz source signal.
- **Please make sure no Over-scan setting in the monitor. Otherwise, the image position will need to be corrected.**

20. Limitations in Image Flip and Rotation

Image 90/270 degrees image rotation is only available in input resolution under 4k/2k @30Hz (included). While the image is rotated or flipped, no 3D motion adaptive de-interlaced function will exist. We recommend applying a progressive source signal to get the best video quality.

21. Limitation in Audio Output

Users can only select one audio output from Processor-1 (CH1/CH2) and Processor-2 (CH3/CH4). In each Processor, if both HDMI and DP input are selected, only HDMI audio will be selected as audio output.

Technical Support

22. Trouble Shooting

22.1. Front Panel LED lights

- Users should see Input / Output LED lights in each channel. If no light is illuminated in a specific channel, please check Input / Output connecting cables, signal source & monitor.
- OSD may be locked if a user sees continuous flashing in some channel LED. Please press the [Menu] key for 5 seconds, and it will disable the [OSD locked] function.
- If the [INFO] key LED is lighted, the OSD Menu is locked and can't be used. Please use the remote controller and press the [850] number keys to disable OSD Menu Lock.

22.2. Intermittent or Loss of Input Signal

- Check the HDMI cable quality and make sure all cables are fitted correctly. 4k/60 signal requires high-speed certified cables.
- Cable length: Connecting cable length should be short as possible. Replace a short cable to verify the probable root cause.
- HDCP compliant issues: If the input source or the monitors are not HDCP compliant, it can stop G406 from negotiating the HDCP link and show intermittent, abnormal, or no image.
- Resolution issues: check if the signal source and connecting cables can provide the signal requested by G406.
- DVI/HDMI signal compatibility: some display devices may only support HDMI or DVI video signals and execute false signal format detection. The default output is HDMI. Users can change output with DVI format through [Options]→ [Setting]→ [DVI]→ [On].
- Usually, swapping with different cables, output channels, signal sources, and monitors can verify the root cause of the failure.
- When it is possible to have signal compatibility issues, the user can add one HDMI splitter or switch in the middle to change the signal impedance. It may fix the problem.

22.3. Image rotation can't be implemented

- If the input signal is above 4k/2k @30Hz, the image 90/270 degrees rotation function will be disabled.

22.4. Video quality issues

- Use the highest resolution and number of color bits (RGB 4:4:4) images allowed by G406 to be used as a signal source whenever possible.
- There are several lower-quality AV players, and the specification and actual output are different, or because of the use of lower color sampling bits or poor image compression technology, resulting in lower quality or image could be smoother (LAG).
- If the use of H.264/H.265 compressed files, please select a player with hardware decoding to get

Smooth video quality.

- If the input signal is the interlaced signal (interlaced-1080i), and the image is rotated or flipped, then the channel will have no [3D Motion adaptive de-interlaced] processing function. If the user applies a static image source, the output video will have a slight jitter phenomenon. 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.

22.5. System setting can't be executed:

- System control applied to the complete system can only be executed through CH-1.
- After the FW update, please insert the small pin into the RESET hole on the back panel for 5 seconds to reset the system to default to eliminate unnecessary settings. It will not affect Profile Index storage data.
- After Reset, the user will see the "Reset to Default" message and the FW update process is finished.

22.6. Synchronization issue in the outputs

- 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. If the input source is 50Hz with 60Hz output, then it is possible to see some lag among the displays.
- The display devices may have different delay times under different settings. For example, if the system with high-end video processing, such as noise the education or ME/MC, it may increase a few frame delays. Please make sure all the displays with the same settings.
- Please set Options → Setting → Frame Lock as [Normal] to implement the Locked Frame function while using multiple units of G406 to avoid not synchronization or frame tear issues.
- Each Processor shall be set separately.

23. Technical support

- Users can send e-mails to support@VigilLink.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 cost.

24. 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 G406 in an environment free from dust, moisture, and high temperatures with good ventilation.

24.1. Warranty:

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.

24.2. Maintenance and Repair

Apart from what is detailed in User Guide, maintenance should be carried out by a competent technician assigned by VIGILLINK. If G406 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.

Specifications

- ✧ Input: 2x HDMI2.0b for all channels, 1x DP1.2a for CH1/CH2, 1x DP1.2a for CH3/CH4
- ✧ Input HDCP: HDMI: V2.2/V1.4, DP: V1.3.
- ✧ Max. input resolution: 4096*2160 60fps & 7680x1200 @30Hz, 4:4:4 chroma sampling.
- ✧ Output: 4x HDMI1.4 up to 2048*1200 60 fps. 4:4:4 progressive, 24/30 bits.
- ✧ 2x HDMI2.0b loop out ports for multiple unit cascade & daisy chain connection.
- ✧ Support non-VESA STD input timings.
- ✧ 18 selectable output modes up to 2048x1200 60Hz in each independent output port.
- ✧ Selectable 8/10-bit output color depth.
- ✧ One frame latency: 16.7ms (V=60Hz)
- ✧ Support xvYCC color input processing & 8/10 bits deep color output.
- ✧ Overlap setting for edge blending in each edge up to +_ 1800 Pixels.
- ✧ 3:2/2:2 cadence, low angle smooth algorithm, high-quality scaling engine.
- ✧ 3D motion adaptive de-interlace.
- ✧ 10-bit processor, frame rate conversion.
- ✧ 50Hz in/out to avoid video artifacts.
- ✧ Matrix switch for multi-video display.
- ✧ Frame lock for synchronized outputs.
- ✧ Support HDR input signal but no HDR effect in the output.
- ✧ Individual 90/180/270 rotation, flip, cropping, scaling & color adjustment in each channel.
- ✧ When image rotation is 90/270 degrees, the maximum input is 4k/2k 30 fps.
- ✧ Embedded HDMI audio in each output.
- ✧ Selectable and programmable EDID.
- ✧ ESD Protection: ±15kV (Air-gap discharge), ±8kV (Contact discharge).
- ✧ DC 12V/1.1A, max. 13.2W, (100-240 VAC PSU)
- ✧ Working environment: 45° C, 10-90% RH
- ✧ Control: IR, RS232, USB, Ethernet
- ✧ Dimensions (Body only): 440mm*186mm*44mm (without protruding parts). 440mm*197mm*55mm (including protruding part)
- ✧ Weight: 2.31 kg (body only)
- ✧ CE/FCC/RoHS Certified
- ✧ 30-month Warranty.

