G-403 Quick User Guide

For Preset display mode user

1. Unpack G-403 and connected with 12V DC power supply unit.
2. Check User Manual (UM) to select the display mode # as you need. Please also pay attention to the Bezel Correction setting.
3. Set Display Mode dip SW based on the modes #. If the No. is 125, it means the dip SW pin 1, 2 & 5 should be set at ON (up) position. All the rest is still at OFF (down) position.
4. Install the LCD display as showed in UM with correct position, angle and direction.
5. Disable 'OVERSCAN" function if you use conventional TV. Otherwise the image location may be shifted.
6. Select input port and set EDID in G-403 to let PC/signal source output desired resolution to the system.
7. Power on signal source, G-403 and LCD, then you will see the result.
8. If no input signal, G-403 will automatically power off after 60 seconds. Once the input signal appears again, the system will power on automatically.
9. If there is image shift, please check if you select the right mode for bezel compensation.
10. If you want to add PIP or display two contents on the video wall, please enable PIP/POP mode.
11. If any change is required in Dip SW, please turn system OFF & ON again to get new setting.
12. Please check output LED indicators and make sure all output LED is ON. It means GeoBox had handshake with display devices already.
13. You can connect a monitor via loop out port to see original signal for easy system operation.
14. Please note that poor cable or long distance connection may cause dot noise.
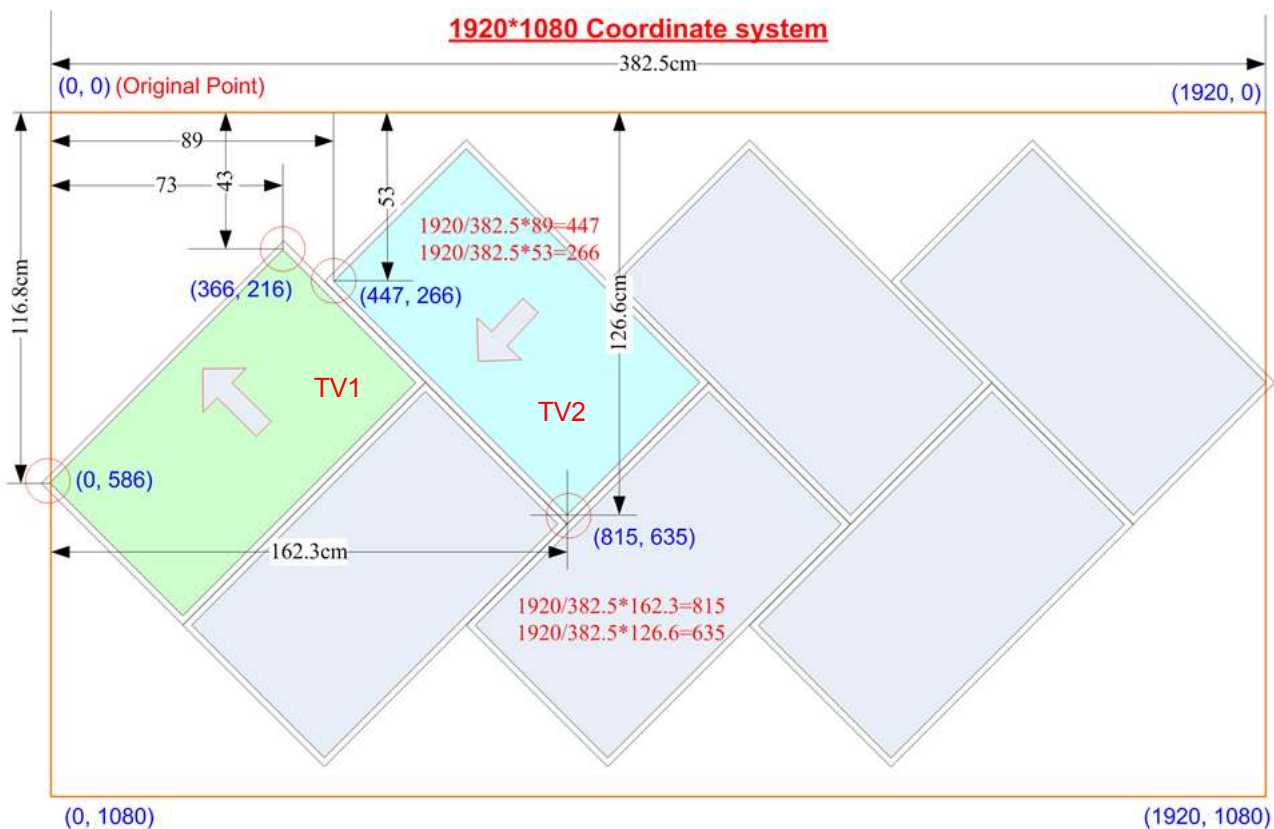
G-403 Advanced applications through remote controller and OSD

1. User can use more advanced functions by OSD menu through remote controller.
2. If GeoBox is installed at a location that can't be directly accessed by remote controller, please connect IR Extender to IR Ext connector on the back panel and set IR receiver at a position that can be accessed.
3. To select input resolution by [EDID] setting ([Options]→[Setting]→[EDID]). See more details in user manual.
4. Turn all Dip SW pins in [Main Input] to OFF position to switch the authority of the system control to OSD setting. If any [Main Input] Dip SW is turned to ON position, Dip SW setting command will be the 1st priority to execute if OSD setting is conflicted with Dip SW setting.
5. Apply input signal and select input port by OSD and remote controller. If no input signal, the system will automatically power off after 60 seconds. You can set [Standby Time Out] to "0" to keep G-403 in power on status even no input signal. Once you had selected an input port and input signal has been detected, G-403 will wake up and send out the signal to LCD automatically.
6. Before you select specific display mode from OSD menu, please check Display Mode list. You need to be familiar with OSD operation. After selecting display mode, the OSD will be also split into different sections.
7. Open OSD and navigate to [Video Wall]→[Output Mode] menu. You will find the icons for all display modes with the display mode number at the bottom position. Please click on it to select the display mode you need.
8. You can connect a monitor via loop out port to see original signal for easy system operation.

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9. *After finishing OSD operation, please save the result in [Profile] menu. When you turn OFF/ON the system again, it will remain the same setting without change unless you have other Dip SW settings.*

10. *For cascade and advanced operations, please see more details in User Manual. When you operate [Video Wall] setting, it may have frame tear in the display. It will disappear when you power OFF/On the system.*

How to create custom display mode by user

1. User can create all kinds of playback modes for regular, portrait and irregular video wall with different size, resolution and bezel LCDs at any angle and position through input the coordinates of two corners in each LCD--Top left and Top Right.

2. 4 LCD as one display units and can be cascaded without number limitation. The display panel shall be at 16:9 aspect ratio. Different aspect ratio LCD requires customization in factory.

3. User can convert physical design drawings into 1920x1080 coordinates and pick up the coordinates at Top Left and Top Right corners in each LCD active display region, then input to G-403 through OSD or PC tool to get the result. The original point for the coordinate system is set at Top Left corner as (0, 0)

1920*1080 Coordinate system

- 382.5cm
- (0, 0) (Original Point)
- (1920, 0)
- 89
- 73
- 43
- 53
- 1920/382.5*89=447
- 1920/382.5*53=266
- (366, 216)
- (447, 266)
- 116.8cm
- 126.6cm
- TV1
- TV2
- (0, 586)
- (815, 635)
- 162.3cm
- 1920/382.5*162.3=815
- 1920/382.5*126.6=635
- (0, 1080)
- (1920, 1080)

4. In above drawing, the coordinates for TV1 and TV2 are as follows:

   TV1 coordinate for Top Left corner=(0, 586)、Top Right corner=(366, 216)

   TV2 coordinate for Top Left corner=(815, 635)、Top Right corner=(447, 286)

5. Please pay attention to the display direction of the TV

6. Procedures to key-in coordinates into G-403 via OSD menu:

   [Video wall]→ [Manual Mode]→ [Index 1~Index5] (select location to save settings)→ select LCD [TV 1~4]→ select [Top Left/Top Right]→ Slide bar to input Coordinates→ Done

7. GAlign PC tool is available to key-in the coordinates into G-403 through RS232 connection.

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8.   User can also take picture of the LCD array and put this photo into a 1920x1080 coordinates system and collect 8 points of the coordinates for 4x LCD, then input these numbers into G-403. The photo needs to be corrected at rectangular position then use Microsoft "Paint" to measure the coordinates. Here are the procedures:

   a、   To open the photo with Microsoft "Paint".

   b、   To show grid on the background for easy position selection.

   c、   To select the photo and cut the photo at the edge and only reserve active display area.

   d、   Re-size the photo with 1920x1080 resolution.

   e、   To move the photo at the position you want to display on 1920x1080 coordinate system.

   f、   Measure Top Left and Top Right corners for each LCD active display area and collect coordinates.

   g、   Input these coordinated into G-403. Then you will get the result

   h、   Fine-tune the position for each LCD through menu under [Manual Mode].

9.   Multiple units cascade mode:

   a、   If the signal source is 1920x1080 or less, then take a picture or make drawing for complete video wall. Assign 4 LCD for one G-403. Follow the same procedures as described in previous section to collect coordinates for each LCD and input to G-403 to get the display that you need. The system still can support input resolution higher than FHD but the video quality will be degraded.

   b、   If the signal source is more than FHD and user wants to use higher signal input resolution. User needs to split the image into several sections in FHD to cover the LCD display range in each G-403. After finish the assignment, user needs to do further video wall settings to split the signal source for each G-403 and adjust image positions so that adjacent G-403 image can match together. All of the operations can be done via OSD.

10.   Portrait display mode:

   If the display is at portrait position, user can rotate the video wall at 90/270 degrees and collect the coordinates to build the system to get higher input resolution and better video quality. After installation, user needs to apply 90/270 degrees rotated content to get correct display angle, i.e. PC portrait display mode.

11.   Save file and fine –tune position

   a、   After complete setup, user needs to feed content to the system and check the result.

   b、   User may be difficult to find the operation menu in signal source or PC Desktop for operation because some content may be missing in irregular video wall display.

   c、   If user can't see operation menu in video source. The easiest way is to connect one of the LCDs with G-403 loop out port so that user can see complete image for system operation and save settings.

   d、   User needs to save the settings into [Option]→ [Settings]→ [Profile]→ [Save]→ [Index].

   e、   Please apply signal source to video wall and check if further position adjustment is required or not.

   f、   User can use OSD for image position fine-tune. Please figure out the relation among 4 corners in a screen with 16:9 aspect ratio. If one corner is fixed, and change the position in the second corner, the other two corners image position will be also changed to show a new image in 16:9 aspect ratio.

   g、   User can select different [Index] or to select different display mode under [Video Wall] → [Output Mode] menu to display full screen in each LCD for easy signal source control.

   h、   User can also set input dip SW manually and turn of/on the system again to get four independent full screen displays for user to do further signal source operation. Once finish signal source operation, user needs to go back to recall Index in [Manual Mode] setting or in [Profile] to show required screen.

Image looping playback and automatic image position shift for LCD protection

1. User can create up to five playback modes and execute looping playback with selectable time interval and playback modes.

2. Different playback mode shall come from the same input port. One of the application is that user can display a product at different rotation angle or zoom in/out the product to see different feelings. User can also display a series of products on the screen and pop up each product at different time interval.

3. If looping playback from different input ports is required, user needs to use RS232 control to switch different contents.

4. By the same concept, user can slightly shift the image at some interval to prevent burn-in mark in LCD to extend the life time of the LCD panel. This is important for a still image display on the LCD.

Dynamic aspect ratio change and position shift across entire video wall

1. User can change entire video wall image (4 LCD) aspect ratio from 50% to 200% at both horizontal and vertical direction through OSD and save into [Manual Mode]→ [Index].

2. This function allows users to select different [Index] to display contents on the screen from all kinds of signal sources but still maintain required aspect ratio without distortion or to keep full screen display.

3. Entire video wall image position can be shifted at H/V direction. It is helpful to crop image and highlight on the screen and convenient for image alignment in multiple units cascade application.

4. The above aspect ratio and image shift functions can be save into [Manual Mode]→ [Index] for looping playback so that viewer will see dynamic switching images on the screen to get more impressive feeling.

5. Complete image position shift, Zoom In/Zoom Out can also be implemented through [Overlap] under [Video Wall] OSD menu. However, different adjustments through [Overlap] menu can't do looping playback. It will affect complete video wall display including user custom modes and looping playback.

Basic function

Pure hardware four channel Video Wall Processor

4 LCDs as one display unit

1080P signal across one display unit

Pre-defined display modes

Selectable preset bezel correction

PIP/POP function

Dip SW selection, no PC required

Advanced function

Additional functions controlled through OSD and remote controller

HDMI Loop out port for daisy chain connection

Cascade with multiple G-403 without video distributor

Switching between single content or multiple contents

Apply 4K UHD input for cascaded video wall

More flexible PIP/POP settings

Custom display modes created by user

Looping playback and LCD life protection

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Version: 2.01

Table of Contents

Revision History

Revision	Date	Originator	Comments
V 1.01	2015-1101	Steve Wang	First revision
V 1.02	2016-0106	Steve Wang	Add custom mode function
V 2.01	2016-01-22	Steve Wang	Add complete custom mode operation menu

Limited Warranty

This device is designed and tested to the highest standards and backed by two years' 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/or other unusual damages. The customer shall pay shipping charges when the unit is returned for repair. Manufacturer will pay shipping charges for return shipments to customers.

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

FCC/CE statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to 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 in accordance with 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.

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1   <u>Introduction</u>

G-403 is taking irregular creative video wall to a new level. Combining with pre-defined playback modes, Lego cascade and friendly OSD operation, it can create all kinds of playback modes for regular, portrait and irregular video wall with different size, resolution and bezel LCD at any angle and position without PC or software. Conventional TV and monitor can be served as display devices. Users will benefit with great effectiveness, flexibility and ease-of-use.

G-403 is pure hardware standalone system. It can connect with various video sources and provide a simple and reliable solution for professional creative video wall.

Features:

a、 3 input ports to support HDMI, DVI, DisplayPort, VGA and YPbPr signals.

b、 Support up to 4k/2k @30Hz or 3840x1080 @60Hz input signal.

c、 Maximum output resolution up to 1920x1200.

d、 Equipped with 4x HDMI outputs in one unit.

e、 Multiple units cascade to build large-scale high resolution video wall.

f、 30 pre-defined playback modes selected by Dip SW.

g、 Custom display modes can be created by user.

h、 Connect directly with various video sources up to 4k/2k.

i、 4 LCDs will share one FHD signal source but can share 4k/2k input signal for 4x4 or large video wall through multiple units cascade.

j、 User can create all kinds of playback modes for regular, portrait and irregular video wall with different size, resolution and bezel LCD at any angle and position.

k、 Flexible aspect ratio control across entire video wall through OSD menu. This function can allow user to use any signal content from none PC based devices and still keep required aspect ratio without distortion.

l、 Integrated with the function for entire image (4 LCD) position shift without changing aspect ratio.

m、 4k/2k HDMI loop out port for monitoring and daisy chain connection.

n、 Selectable EDID to optimize vide quality.

o、 Auto image shift to prevent LCD from burn-in mark.

p、 PIP (picture in picture) and POP (side by side) multi-content function.

q、 Power on/off control via auto signal detection.

r、 Up to 5 self-made display modes can be saved and looping playback in video wall.

s、 No video splitter, PC or software is required. More reliable.

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2 <u>Specifications</u>

Main items	Functions	G-403	G-405
General description		Quad LCD video wall controller with preset display modes and custom modes created by user	4k/2k quad LCD video wall controller for LCD array at portrait and landscape direction
Main functions	Video processor	10-bits	10-bits
	LCD controlled by one processor	4	4
	Max. display contents in 4 LCDs	2 (PIP/POP)	2 (two processing modules)
	Modular cascade for large display like Lego	Yes	Yes
	Video wall with portrait LCD without rotating input source	Yes	Need portrait content
	Video wall with PIP/POP	Yes	-
	Max. source resolution shared to 4 LCDs	FHD	4k/2k
	Share 4k/2k input in multiple units cascade	Yes	Yes
	Preset modes selected by dip SW	Yes	No preset mode
	Looping playback and dynamic position shift for LCD life protection	Yes	-
Input & Output	Video Input Ports	1x DisplayPort, 1x HDMI, 1x DVI-I (DVI-D, VGA, HDMI)	1x DisplayPort, 2x HDMI, 1x DVI-I (DVI-D, VGA, HDMI)
	Video Output	4x HDMI	4x HDMI
	4k/2k HDMI loop out port for daisy chain	Yes	Yes
	Audio Output	HDMI audio	HDMI audio
	Support YPbPr video via VGA input port	Yes	Yes
	Support DVI-D, VGA & HDMI by DVI-I input port	Yes	Yes
	4k/2k @30Hz, 1080p @120Hz, 2560x1600 / 3840x1080 @60Hz input with 4:4:4 sampling	Yes	Yes
	Frame Lock for system synchronization	Yes	Yes
	Selective EDID for optimized video quality	Yes	Yes
	HDCP compliant	Yes	Yes
Image rotation	Image 90°/270° flip and rotation	Yes (All LCD at the same time)	-
	Image 180° flip and rotation	Yes (All LCD at the same time)	Yes (For individual LCD)
	Max. source resolution shared to 4 LCDs	FHD	4k/2k
	Share 4k/2k input in multiple units cascade	Yes	Yes

Video wall	4K input source can be split and assigned for each display unit to build one large video wall.	Yes	Yes
	Image location can be adjusted up to +_900 pixels in all directions for image mapping	Yes	Yes
	Custom display modes created by user with LCD at any position and angle	Yes	Only LCD at portrait and landscape direction
	Looping playback for custom modes	Yes	-
	Image shift for LCD protection	Yes	-
PIP (Picture in Picture) and POP (side by side)	PIP up to 1024x768 at selectable location with selectable aspect ratio and input source	Yes	-
	POP to show two image in one video wall with full screen or keep original aspect ratio	Yes	Yes
	High end 3D motion adaptive de-interlace in PIP/POP windows	Yes	Yes
Video processing	10 bits 4:4:4 full bandwidth sampling with 3D de-interlace, smooth edge algorithm and 3:2/2:2 film mode detecting and recovery	Yes	Yes
	High quality video and graphics scaling up and scaling down	Yes	Yes
	Color adjustment for one display unit (Hue, saturation, sharpness, contrast, brightness, preset modes, discrete RGB)	Yes	Yes
System control for easy use	Full function IR Remote controller	Yes	Yes
	Cabled IR Receiver Extender (up to 20 meters)	Yes	Yes
	Ethernet control and operation via LAN or WiFi (NB, iPad, Smart phone)	Yes, need to add external Ethernet to UART module	Yes, need to add external Ethernet to UART module
	ASCII control protocol over RS-232	Yes	Yes
	Auto Shut off output signal when input is missing	Yes	Yes
	No PC, OS or special tool required	Yes	Yes
	Ear mount screw holes	Yes	Yes
Dimension & weight	Only Box body, not including remote controller, power supply and packing	330x160x35mm, 1.5kg	303x155x55mm, 1.8kg

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3   Helpful tips for installation and operation

3.1   If multiple G-403 cascade function is executed, user can put G-403 in front of the video wall to do the setting, then install to the final place. User can also extend IR receiver to a location in front of video wall for further settings.

3.2   Each G-403 is equipped with IR extenders. User can extend the cable distance up to 20m through audio cable.

3.3   OSD Lock / Unlock: When continuously press [MENU] key in IR Remote Controller for 5 seconds, the OSD function will be locked to prevent from changes of the settings. To press MENU key for 5 seconds again, it will unlock OSD and user can manipulate OSD again.

3.4   Picture menu in the OSD can only be activated while the input signal is not in color [Preset Mode]. To select [Image Properties] → [Custom] → [Save], then user can activate [Picture] menu again.

3.5   [Image Setup] menu will not be activated if the input source is not from VGA.

3.6   Once finishing one video wall setting, user can apply the same setting value to next project with the same configuration. It will save time for the installation and settings.

3.7   Please make sure that the position and angle of the LCD shall match the instructions in G-403.

3.8   G-403 can only be connected with the same size and resolution 16:9 LCD to keep correct position. Customization is required for different size and aspect ratio LCD.

3.9   Poor signal cable connection or too long cable may cause noise on the display. Re-connect or replace a new cable may solve the problem.

3.10 Please pay attention to signal source connection. It no signal is detected for more than 60 seconds, the system will be automatically shut off.

3.11 If the video wall aspect ratio is not the same as signal source, it will create abnormal aspect ratio. Please select right EDID to let PC output a desired resolution. To apply different [Overlap] value under [Video wall] menu or [Ratio] under [Manual Mode] menu can also solve the aspect ratio issue.

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4   Outlook and key functions
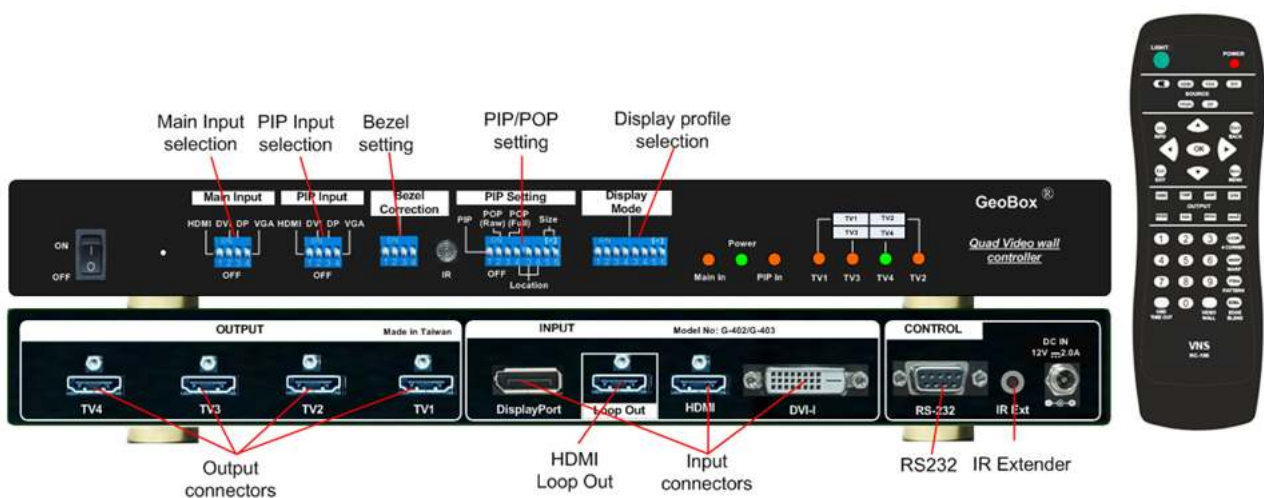
Note: After finishing DIP SW setting, Power OFF and ON again is required to execute the settings.

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5   Preset Display Modes

5.1   LCD (TV) selection

    i.   Type of LCD: low cost 16:9 LCD or TV can be used. No need to have matrix control feature.

    ii.   Some Display Modes support TV at top down flip position to compensate the bezel difference.

    iii.   Output resolution: the default output resolution is 1920x1080 @60Hz.

    iv.   Customization is required if user uses LCD with different dimension and bezel size.

5.2   Bezel compensation

    i.   Bezel compensation function is built-in in G-403. It is based on LG 47", 55" LCD and 1.5% for conventional TV. User needs to check if [Bezel] dip SW shall be ON or OFF in the mode list.. The actual active display size in different LCD brand with the same nominated size may be still different.

    ii.   User can create custom display mode to solve bezel and panel size diffference issues.

| Bezel correction modes	Horizontal correction	Vertical correction	Estimated "Active to Active" bezel correction value (mm) in H&V							
			32" LCD	40" LCD	42" LCD	47" LCD	50" LCD	55" LCD	60" LCD	65" LCD
3.5mm	0.289280%	0.514177%	2.35	2.86	2.99	3.31	3.50	3.81	4.14	4.46
4.9mm	0.471163%	0.837464%	3.64	4.47	4.68	5.20	5.51	6.03	6.56	7.08
1.50%	1.496090%	2.552533%	10.68	13.28	13.93	15.55	16.52	18.14	19.77	21.39

55LV77A / 55LV75A

Active to Active (Gap=0.3mm) 3.8mm
Bezel to Bezel 3.5mm
2.25mm(Left/Top) / 1.25mm(Right/Bottom)

Bezel correction with 3.5mm and 4.9mm will apply to all edges only apply to the edges adjacent with other TV. In below & B but not in edge C&D
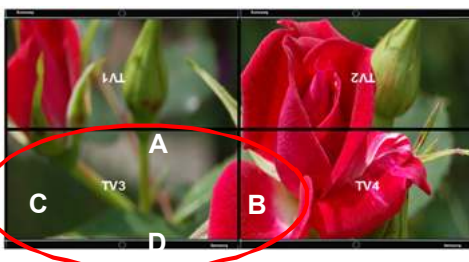
- *Four types of bezel compensation:*
  - a. *No bezel correction: no information missing*
  - b. *3.5mm mode: H=0.289280%, V=0.514177%*
  - c. *4.9mm mode: H=0.471163%V=0.837464%*
  - d. *1.5% mode: H=1.496090%V=2.552533%*
- *The actual "bezel to bezel" size to be corrected is based on the active display width (H) and height (V) multiple the above % value.*
- *For example, if user uses 55" panel (1218 * 685mm active display) and select 4.9mm bezel correction mode, the "Bezel to Bezel" value will be H=1218*0.471163%=5.74mm*
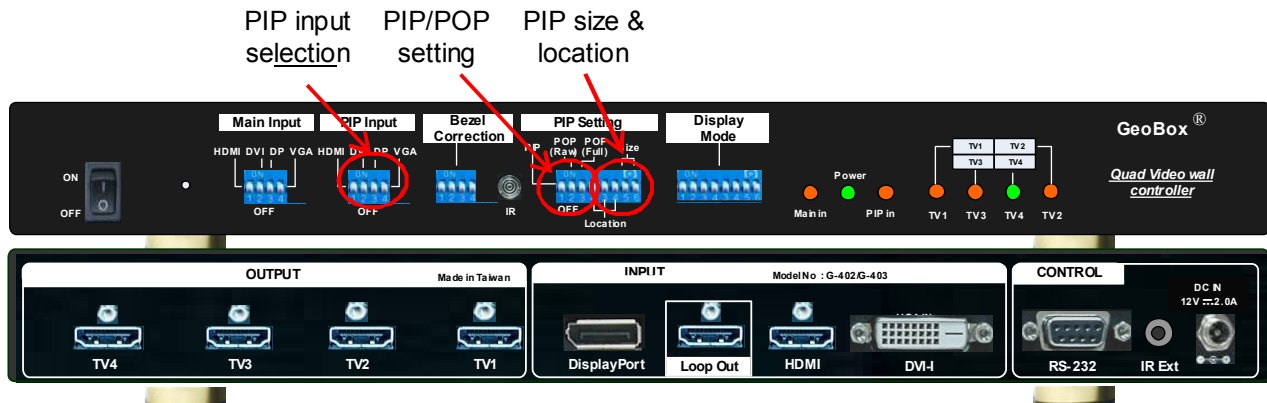
  *V= 685*0.837464%=5.74mm*

  The actual "Active to Active" size is

  H=5.74 mm+0.3mm=6.04mm

  V=5.74 mm+0.3mm=6.04mm

5.3   **PIP/POP setting**

a.   PIP Input selection

   User can use Dip SW to select PIP/POP input source from HDMI, DVI, DP & VGA input ports.

b.   PIP/POP mode selection: direct selection from [PIP Setting] DIP SW

PIP (Picture in Picture) mode   *"POP Raw" display mode*

"POP Full" display mode

Please adjust the aspect ratio of POP image under [Image Properties] menu while using remote controller.

c.   PIP Size and Location

   ● Preset size: Max 1024x768 resolution (100%)

   ● Preset selection from DIP SW: 25%, 50%, 75%, 100%

   ● Preset Location: 7 positions across the video wall can be selected from DIP SW. The Dip SW positions are as follows: Top Left (3), Top Right (34), Bottom Left (5), Bottom Right (4), Center up (35), Center (00), Center Down (45)

Note: *1. After DIP SW selection, user needs to Power OFF/ON again to implement the settings.*

   2. User can continuously adjust PIP size and location via remote controller.

   3. Please adjust the aspect ratio of POP image under [Image Properties]→ [Scaling]
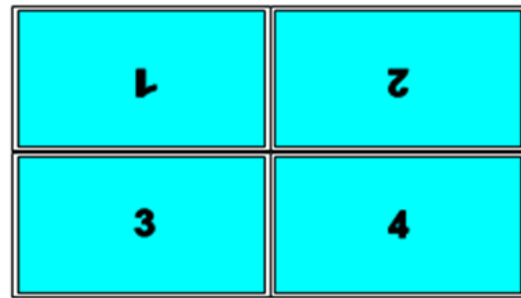

5.4   Preset display mode list

- *Please select 1080p as input source for single G-403 application to get the best video quality.*

- *[Bezel on]: to set Dip SW [Bezel] pin 1 at ON (UP) position.*
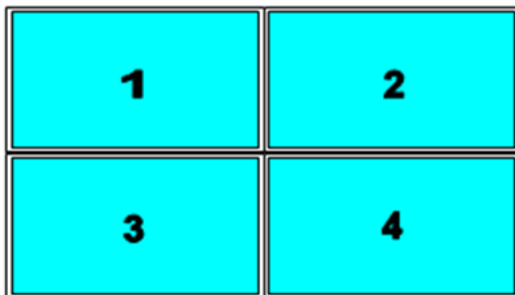
Mode 00 - Duplicate Mode

[dip switch]	4 displays show the same full screen content as video source.

Mode 01 – 2x2 (Ratio 16:9)

[dip switch]	Bezel off: no correction Bezel on: 3.5mm bezel to bezel

```
+----------+----------+
|    1     |    2     |
+----------+----------+
|    3     |    4     |
+----------+----------+
```

Mode 02 – 2x2 (Ratio 16:9)

[dip switch]	Bezel off: 4.9mm bezel to bezel Bezel on: 1.5% bezel correction

```
+----------+----------+
|    1     |    2     |
+----------+----------+
|    3     |    4     |
+----------+----------+
```

Mode 03 – 2x2 with top TV upside down (Ratio 16:9)

[dip switch]	Bezel off: no bezel correction Bezel on: 1.5% bezel correction

```
+----------+----------+
|    Ɩ     |    2     |
+----------+----------+
|    3     |    4     |
+----------+----------+
```

Mode 04– 4x1 (Ratio 2.25)
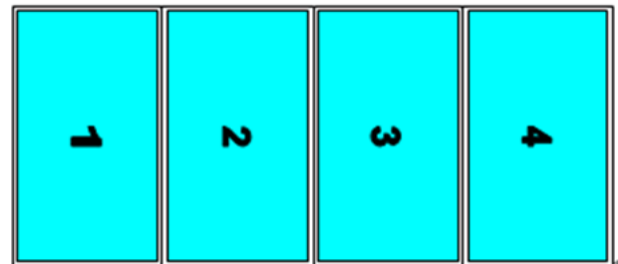
[dip switch]	Bezel off: no correction Bezel on: 3.5mm bezel to bezel

```
+-----+-----+-----+-----+
|  1  |  2  |  3  |  4  |
+-----+-----+-----+-----+
```

Mode 04A – 1x4

[dip switch]	Bezel off: no correction Bezel on: 3.5mm bezel to bezel

```
+----------+
|    4     |
+----------+
|    3     |
+----------+    Please apply portrait signal
|    2     |    source to get normal viewing
+----------+    angle. The aspect ratio of the
|    1     |    content needs to match the
+----------+    display
```

Mode 05 –4x1 (Ratio 2.25)

[dip switch]	Bezel off: 4.9mm bezel to bezel Bezel on: 1.5% bezel correction

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Mode 05A –4x1 (Ratio 2.25)

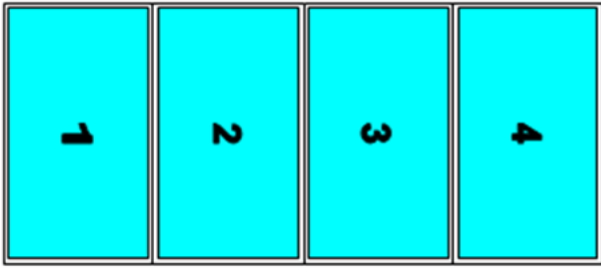| Bezel off: 4.9mm bezel to bezel |
| Bezel on: 1.5% bezel correction |

Please apply portrait signal source to get normal viewing angle. The aspect ratio of the content needs to match the display
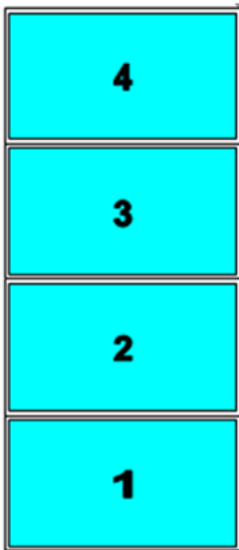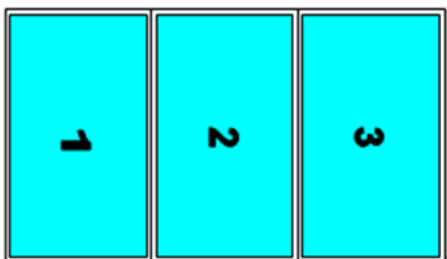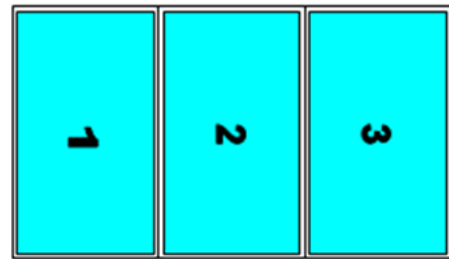
Mode 06 – 3x1 (Ratio 1.69)

(#4 output will show full screen image)

| Bezel off: no correction |
| Bezel on: 3.5mm bezel to bezel |

Mode 06A – 1x3 (Ratio 1.69)

| Bezel off: no correction |
| Bezel on: 3.5mm bezel to bezel |

Mode 12 –3x1 (Ratio 1.69)

(#4 output will show full screen image)

| Bezel off: 4.9mm bezel to bezel |
| Bezel on: 1.5% bezel correction |

Please apply portrait signal source to get normal viewing angle. The aspect ratio of the content needs to match the display

* **Mode 12A –1x3 (Ratio 1.69)**

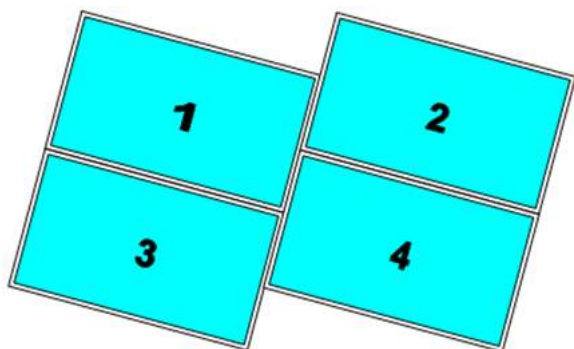| Bezel off: 4.9mm bezel to bezel |
| Bezel on: 1.5% bezel correction |

Please apply portrait signal source to get normal viewing angle. The aspect ratio of the content needs to match the display

Mode 13 – 2x2 with clockwise 15° rotation (Ratio 1.7)
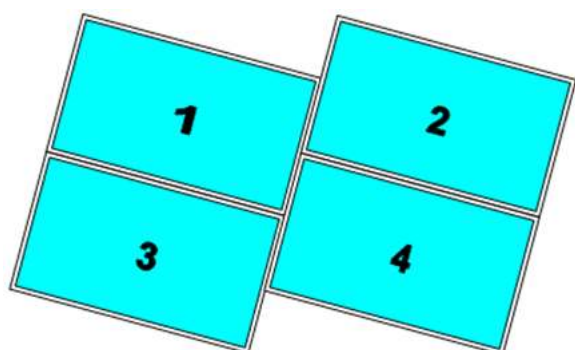
| Bezel off: no correction |
| Bezel on: 3.5mm bezel to bezel |

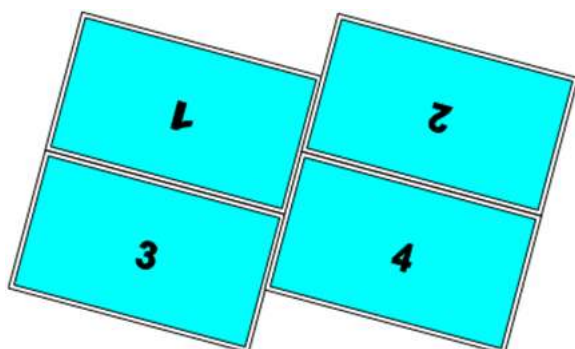### Mode 14 – 2x2 with clockwise 15° rotation (Ratio 1.7)

| Bezel off: 4.9mm bezel to bezel |
| Bezel on: 1.5% bezel correction |

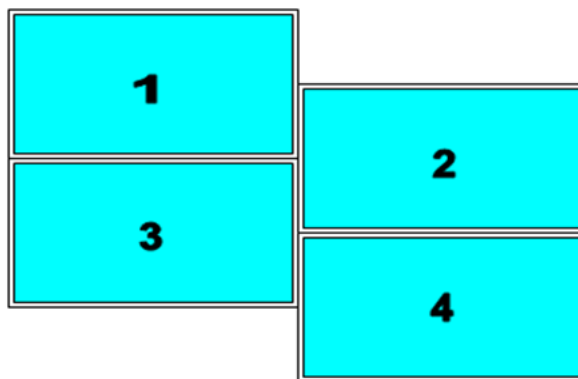### Mode 15 –2x2 with clockwise 15° rotation and TV1 & TV2 at upside down position (Ratio 1.7)

| Bezel off: no correction |
| Bezel on: 1.5% bezel correction |

Mode 16– 2x2 with TV2 & TV4 shift down 1/2 panel height (Ratio 1.42)
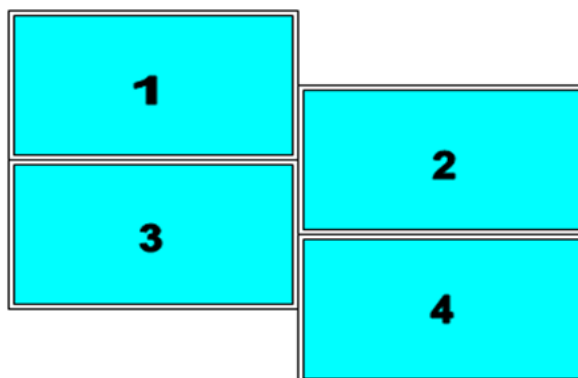

| Bezel off: no correction |
| Bezel on: 3.5mm bezel to bezel |

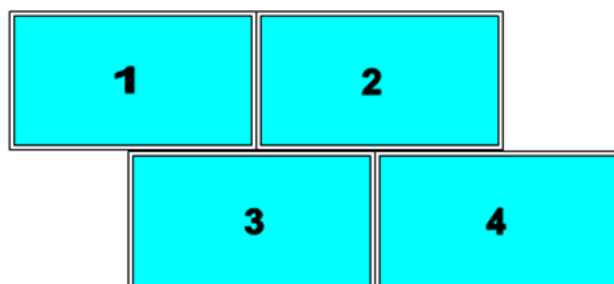### Mode 23– 2x2 with TV2 & TV4 shift down 1/2 panel height (Ratio 1.42)

| Bezel off: 4.9mm bezel to bezel |
| Bezel on: 1.5% bezel correction |

Mode 24 – 2x2 with TV3 & TV4 Right shift 1/2 panel width (Ratio 2.22)
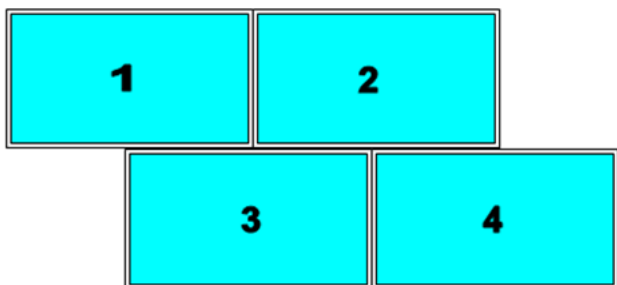

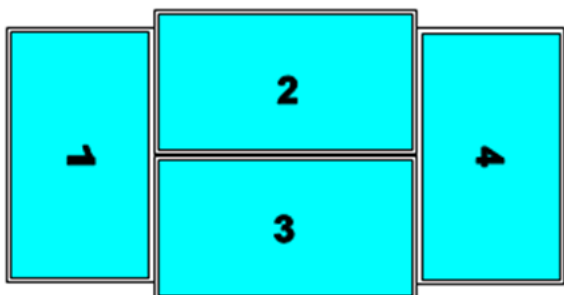| Bezel off: no correction |
| Bezel on: 3.5mm bezel to bezel |

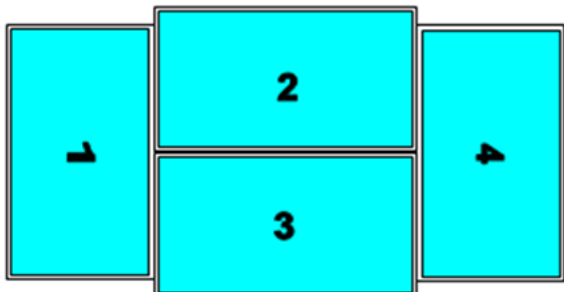### Mode 25 – 2x2 with TV3 & TV4 Right shift 1/2 panel width (Ratio 2.22)

| Bezel off: 4.9mm bezel to bezel |
| Bezel on: 1.5% bezel correction |

Mode 26 –(Ratio 1.89)

| Bezel off: no correction |
| Bezel on: 3.5mm bezel to bezel |

Mode 34 – (Ratio 1.89)

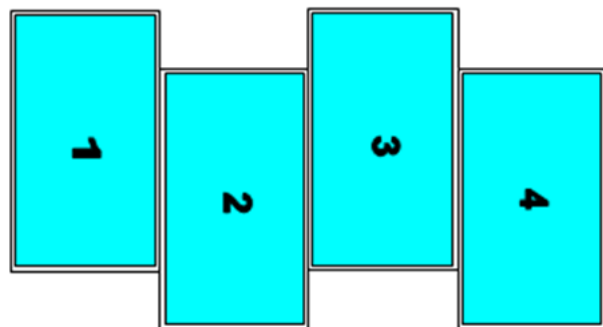| Bezel off: 4.9mm bezel to bezel |
| Bezel on: 1.5% bezel correction |

Mode 35 – (Ratio 5.33) for 3x3 application

| Bezel off: no correction |
| Bezel on: 3.5mm bezel to bezel |

Mode 36 – (Ratio 5.33) for 3x3 application

| Bezel off: 4.9mm bezel to bezel |
| Bezel on: 1.5% bezel correction |

Mode 45 –TV2 & TV4 Down shift with 1/4 panel height (Ratio 1.8)

| Bezel off: no correction |
| Bezel on: 3.5mm bezel to bezel |

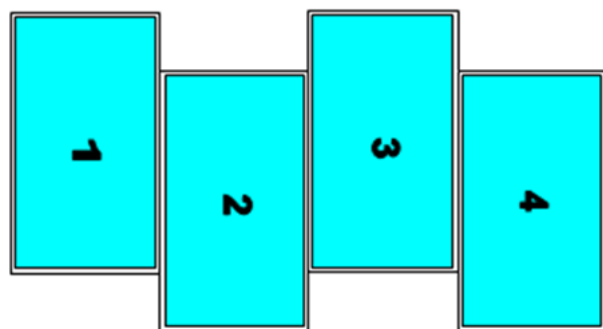## Mode 46 – TV2 & TV4 Down shift with 1/4 panel height (Ratio 1.8)

| Bezel off: 4.9mm bezel to bezel |
| Bezel on: 1.5% bezel correction |

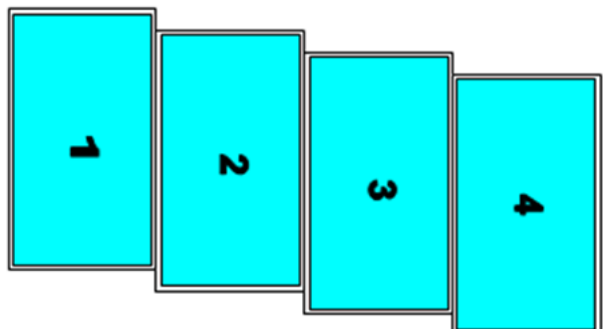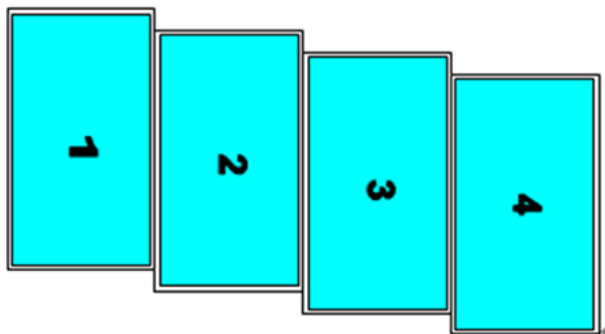## Mode 56 – TV4 Down shift 1/4 panel height (Ratio 1.8)

| Bezel off: no correction |
| Bezel on: 3.5mm bezel to bezel |

Mode 123 – TV4 down shift with 1/4 panel height (Ratio 1.8)

| Bezel off: 4.9mm bezel to bezel |
| Bezel on: 1.5% bezel correction |

Mode 124 – 75° counterclockwise rotation(Ratio 1.77) (#4 output will show full screen image)

	Bezel off: no correction
	Bezel on: 3.5mm bezel to bezel
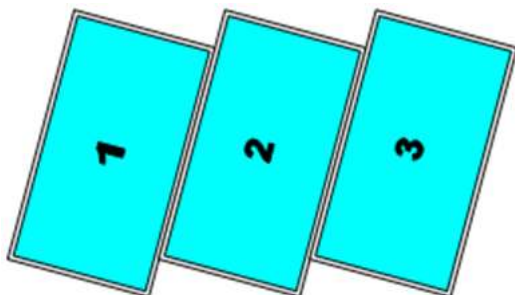
Mode 125 – 75° counterclockwise rotation(Ratio 1.77) (#4 output will show full screen image)

	Bezel off: 4.9mm bezel to bezel
	Bezel on: 1.5% bezel correction
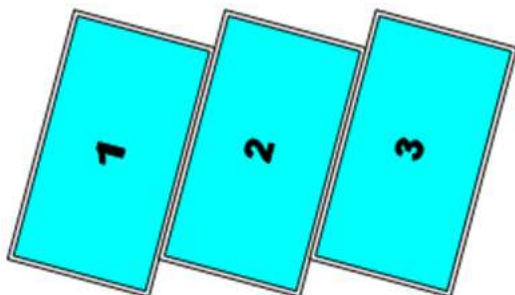
Mode 126 – 48.37° counterclockwise rotation (Ratio 1.03)

	Bezel off: no correction
	Bezel on: 3.5mm bezel to bezel
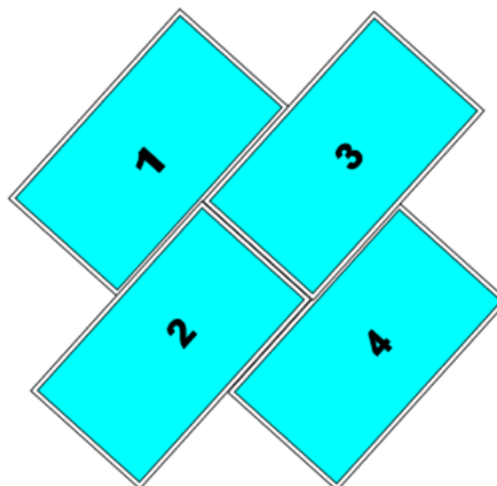
Mode 134 – 48.37° counterclockwise rotation (Ratio 1.03)

	Bezel off: 4.9mm bezel to bezel
	Bezel on: 1.5% bezel correction
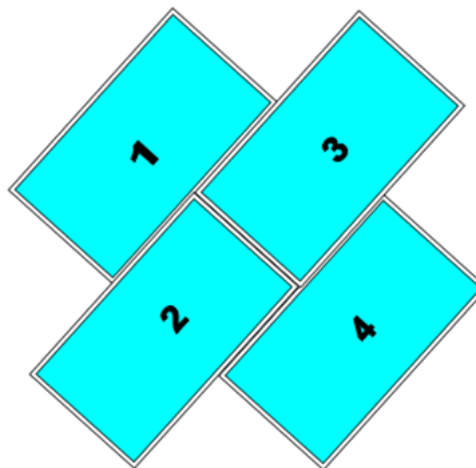
Mode 135 – 45° clockwise rotation (Ratio 1.33)

	Bezel off: no correction
	Bezel on: 3.5mm bezel to bezel
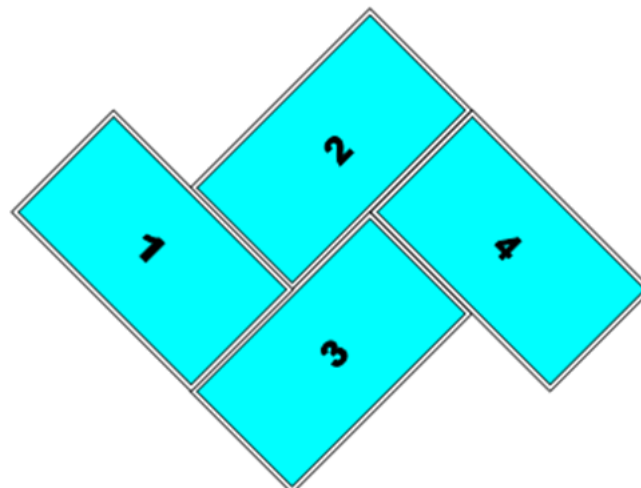
Mode 136 – 45° clockwise rotation (Ratio 1.33)

	Bezel off: 4.9mm bezel to bezel
	Bezel on: 1.5% bezel correction

Mode 145 – (Ratio 1)

	Bezel off: no correction
	Bezel on: 3.5mm bezel to bezel
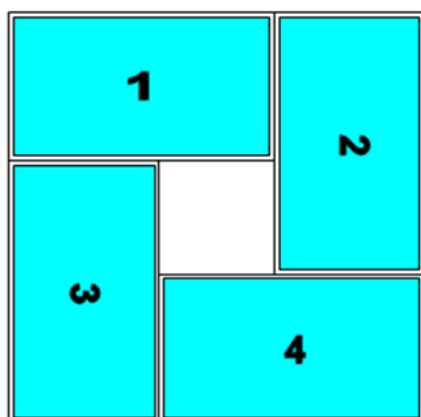
Mode 146 – (Ratio 1)

	Bezel off: 4.9mm bezel to bezel
	Bezel on: 1.5% bezel correction

Mode 156 (Ratio 1)

	Bezel off: no correction
	Bezel on: 3.5mm bezel to bezel

Mode 234 (Ratio 1)

	Bezel off: 4.9mm bezel to bezel
	Bezel on: 1.5% bezel correction
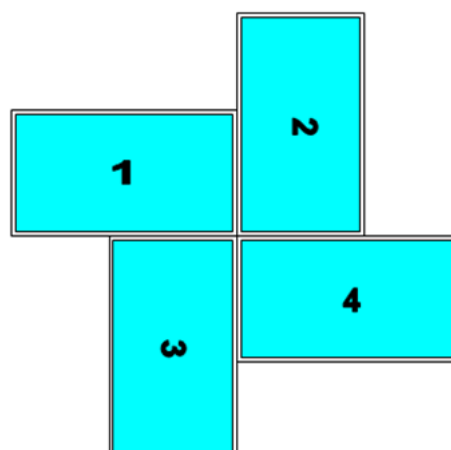
5.5   How to set DIP SW

5.5.1 Example one

* Mode 145 as example:

ON
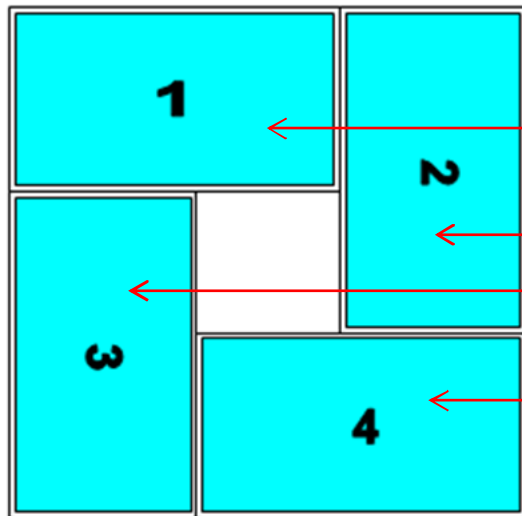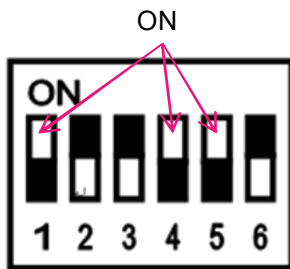
1. Mode 145 means DIP SW pin #1, #4 & #5 shall be set to "ON" (UP) position.

2. G-403 output connection
    - G-403 TV1 output is connected to #1 LCD
    - G-403 TV2 output is connected to #2 LCD
    - G-403 TV3 output is connected to #3 LCD
    - G-403 TV4 output is connected to #4 LCD

3. LCD panel shall be installed in the directions showed in left picture.
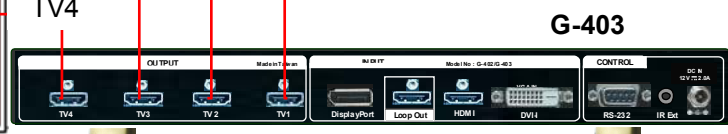
G-403

5.5.2 Example two

* Mode 124 –**75° counterclockwise rotation(Ratio 1.77)** (#4 output will show full screen image)

ON
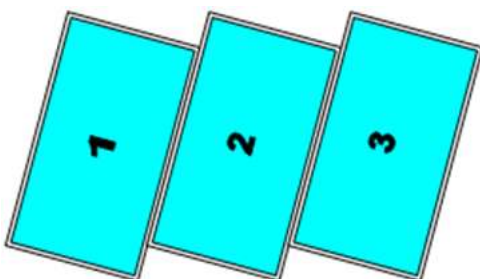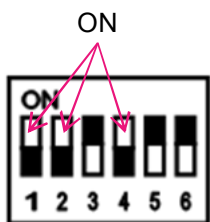
1. Mode 124 means DIP SW pin #1, #2 & #4 shall be set to "ON" (UP) position.

2. G-403 output connection
    - G-403 TV1 output is connected to #1 LCD
    - G-403 TV2 output is connected to #2 LCD
    - G-403 TV3 output is connected to #3 LCD
    - G-403 TV4 output will show full screen content for system monitoring.

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5.5.3 Example three

* Mode 06A – 1x3 (Ratio 1.69)

(Please apply portrait image content to get normal viewing angle. If the content is not at portrait position, then user needs to create custom mode)

1. Mode 06A means DIP SW pin #6 shall be set to "ON" position.

2. "A" means this mode is only be achieved by rotating the image from signal source. If the image is not rotated from signal source, then it is necessary to rotate the image by G-403 through remote controller. Please pay attention to content aspect ratio.

3. G-403 output connection
   - G-403 TV1 output is connected to #1 LCD
   - G-403 TV2 output is connected to #2 LCD
   - G-403 TV3 output is connected to #3 LCD
   - *G-403 TV4 will show full screen image same as signal source.*

5.6   Signal source output resolution selection

Video signal resolution setting will affect final video quality. Please follow below recommendation to set signal source output resolution.

5.6.1 Basic concept for video source output resolution settings

a.   Horizontal direction: If only single unit is required in horizontal direction, please set the horizontal output resolution at 1920. If multiple units of G-403 are required in horizontal cascade direction, then please set the horizontal output resolution at 3840.

b.   Vertical direction: If only single unit is required in vertical direction, please set the vertical output resolution at 1080. If multiple units of G-403 are required in vertical cascade direction, please set the vertical output resolution at 2160.

5.6.2 Example for input resolution settings:

a.   When using single G-403, please apply 1920x1080 @60Hz input resolution.

b.   For dual G-403 horizontal cascade, please set 3840x1080 @60Hz as input resolution.

c.   For dual G-403 vertical cascade, please set 1920x2160 @60Hz as input resolution

d.   For 2x2 four G-403 cascades, 3840x2160 @30Hz input resolution will get the best video quality.

e.   For more complicated cascade, please follow the instruction in another section in this manual.

5.6.3 How to set preferred input timing resolution in G-403

a.   Please change the input resolution by [Option]→ {Settings}→ [EDID] setting.

b.   If the required resolution is not standard VESA standard timing, user needs to set the output resolution from PC.

c.   Please confirm the setting result by [INFO] menu from OSD or IR remote controller.

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6   G-403 Application case study

6.1 Preset mode: Mode 145

1. Install LCD following the directions in drawing.
2. DIP SW #1, #4 & #5 pins in [Display Mode] are set at "ON" (UP) position.
3. Connect G-403 outputs to related LCD
   a.   TV1 to #1 LCD
   b.   TV2 to #2 LCD
   c.   TV3 to #3 LCD
   d.   TV4 to #4 LCD
4. To check if Bezel compensation is required or not. If yes, please enable "Bezel" compensation DIP SW.
5. If PIP is required, select DIP SW in [PIP Input], [PIP Mode], and [PIP Size & Location].

After finishing DIP SW setting, Power OFF and ON again is required to execute the command in DIP SW setting in G-403.

6.2 Preset mode: Mode 00

1. All DIP SW pins in [Display Mode] are set at "OFF" position.
2. ***All outputs will have the same contents as input source. It becomes 3x in / 4x out video converter and switcher.***
3. If PIP is required, please select DIP SW in [PIP Input], [PIP Mode], and [PIP Size & Location].

6.3 Preset mode: Mode 01
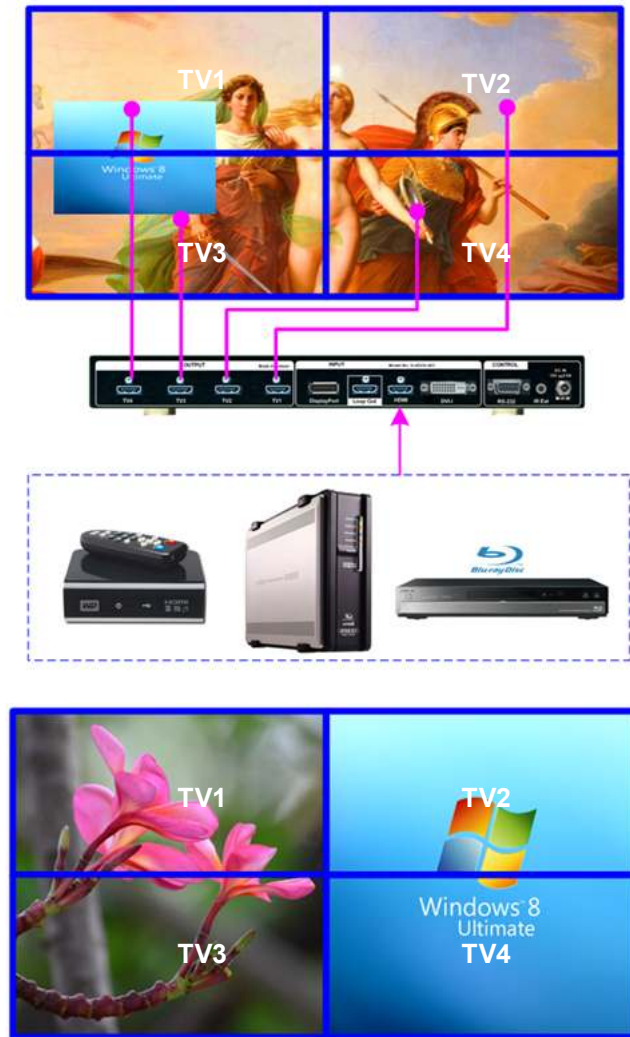
1. [Display Mode] DIP SW #1 is set at "ON" position. It will show 2x2 video wall.

2. Connect G-403 outputs to related LCD

    a. TV1 to #1 LCD

    b. TV2 to #2 LCD

    c. TV3 to #3 LCD

    d. TV4 to #4 LCD

3. To check if Bezel compensation is required or not. If yes, please enable "Bezel" compensation DIP SW.

4. User can show dual contents in one 2x2 video wall.

5. To select PIP Input source and set [PIP Mode] at [POP Full] position, user will get full screen POP image.

6. User can select [POP Raw] to keep original aspect ratio in two contents.

7. Power OFF/ON the system again.

6.4 Preset mode: Mode 03
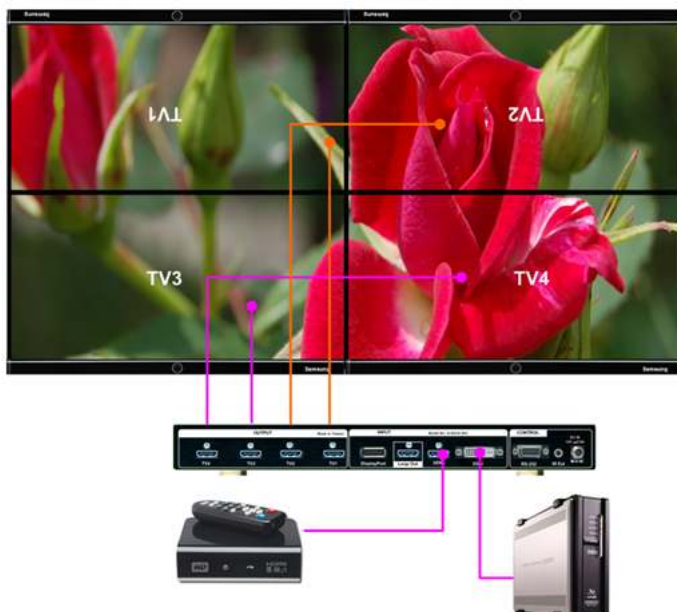
1. Install TV as showed in the picture.

2. [Display Mode] DIP SW #3 is set at "ON" position.

3. Connect G-403 outputs to related LCD

    a. TV1 to #1 LCD

    b. TV2 to #2 LCD

    c. TV3 to #3 LCD

    d. TV4 to #4 LCD

4. To check if Bezel compensation is required or not. If yes, please enable "Bezel" compensation DIP SW.

5. ***Top two TVs are installed at Down Flip position so that the adjacent edges of the TVs have the same bezel size.***

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7 Multiple G-403 Cascade

7.1 Setup procedures

Multiple G-403 can be cascaded up to 15X15 G-403. Below are the procedures for the setting:

a. Connect signal to 1st G-403, then daisy chain to next G-403. Maximum input resolution is 4K/2K @30Hz.

b. To connect IR receiver extender from each G-403 back panel if necessary.

c. Use IR remote control to execute OSD command.

d. To set Box ID # under [Options]→ [Settings]→ [Box ID] menu. It is for easy control for each G-403.

- Press "851" on remote controller, only the commands in #1 G-403 can be executed.
- Press "852" on remote controller, only the commands in #2 G-403 can be executed.
- Press "853" on remote controller, only the commands in #3 G-403 can be executed.
- Press "850" on remote controller, the commands can be executed in all G-403 simultaneously.

7.2 Signal source resolution selection

Correct signal source resolution setting will optimize final video quality. Please try different resolution settings to get the best result. User can select below resolution settings:

- Horizontal: 1920 or 3840
- Vertical: 1080 or 2160

a、 For single G-403, to apply 1920x1080 @60Hz input resolution will get the best video quality.

b、 For dual G-403 horizontal cascade, 3840x1080 @60Hz will get the best video quality.

c、 For 2x2 four G-403 cascades, 3840x2160 @30Hz input resolution will get the best video quality.

d、 For more complicated cascade, please follow the instruction in below section.

7.3 Case study A: 4k/2k 4x4 video wall
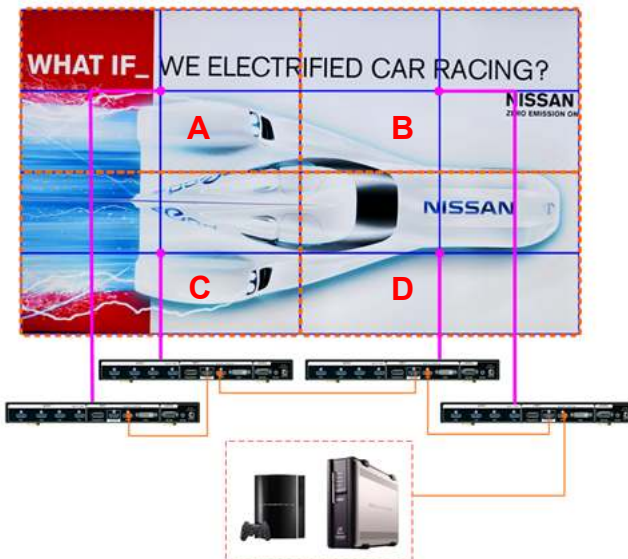
a. Each G-403 will handle one display zone.

b. Connect source signal to all G-403 via daisy chain.

c. Set Display Mode 01 for all G-403.

d. Video wall setting in G-403:

Items	Zone A	Zone B	Zone C	Zone D
Zoom	H=2, V=2	H=2, V=2	H=2, V=2	H=2, V=2
Pan	H=1, V=1	H=2, V=1	H=1, V=2	H=2, V=2
Overlap	RH/BTM	LH/BTM	RH/Top	LH/Top

e. If only single signal source is available, please use HDMI loop out port for daisy chain connection.

f. To fine-tune image position among display zone A/B/C/D by video wall [Overlap] setting.

g. During [Overlap] adjustment, the image may have frame tear. It will disappear after power ON again.

h. Save the final setting to OSD [Options] →[Settings] → [Profile] → [Save] →[Index 1-5]. User can recall it at any time.

7.4 Case study B: 4k/2k 3x3 video wall

   a.   Select preset display mode: Mode 35/36

   b.   Connect the same signal to all G-403.

   c.   Video wall setting in G-403

Items	Zone A	Zone B	Zone C
Zoom	H=1, V=3	H=1, V=3	H=1, V=3
Pan	H=1, V=1	H=1, V=2	H=1, V=3
Overlap	Bottom	Top/BTM	Top

   d.   Signal source shall be connected to all G-403 through daisy chain connection.

   e.   To set overlap pixels to fine tune the image position among each G-403 if necessary.

   f.   During [Overlap] adjustment, the image may have frame tear. It will disappear after power ON again.

   g.   Save the setting under [Options]→[Settings]→ [Profile]→[Save]→[Index 1~5] menu.
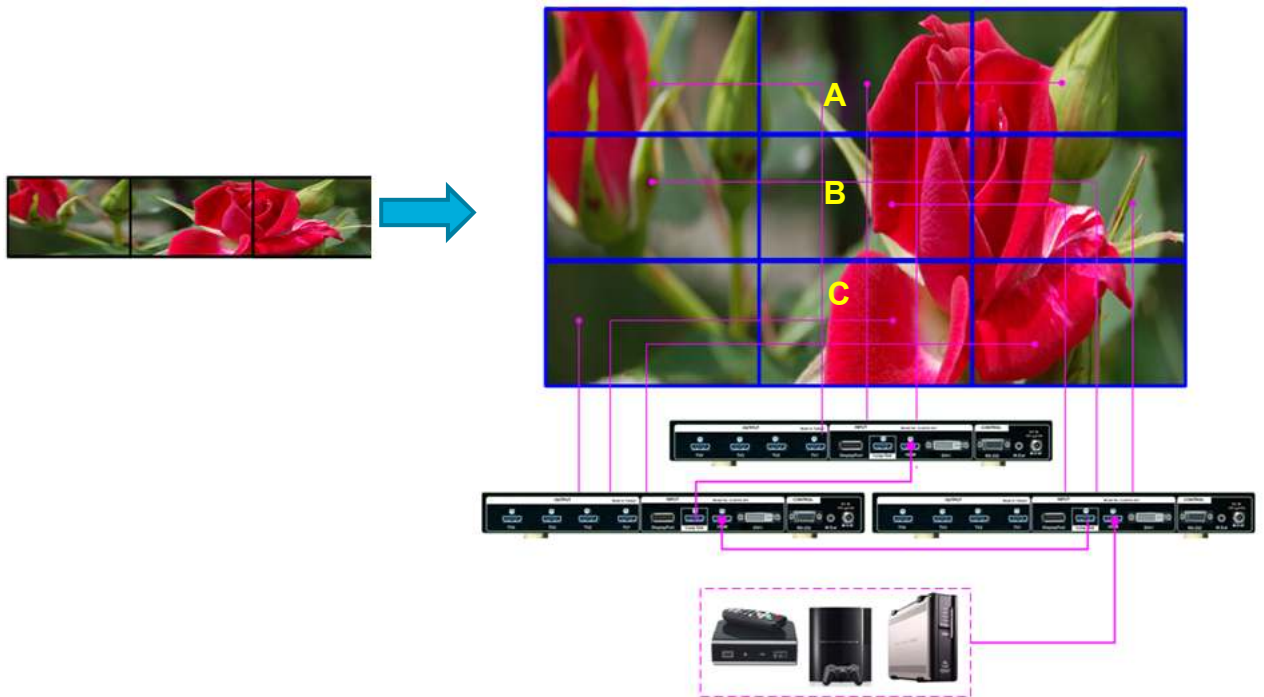
7.5   Case study C: 4k/2k 8x TV irregular video wall

   a.   Select preset display mode: Mode 126/134

   b.   Connect the same signal to all G-403.

   c.   Video wall setting in G-403

Items	Zone A	Zone B
Zoom	H=2, V=1	H=2, V=1
Pan	H=1, V=1	H=2, V=1
Overlap	RH Edge	LH Edge

Overlap pixels for Zone A (Display Unit A) & B (Display Unit B) shall be the same. User can open [Overlap]

menu and select [RH Edge] for A & [LH Edge] for B, then increase the [Overlap] value gradually in both [Display

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Unit A] & [Display Unit B] and will see two images from both G-403 coming closer until the image edge match together.

d.   During [Overlap] adjustment, the image may have frame tear. It will disappear after power ON again

e.   Save the setting to [Options] → [Settings] → [Profile] → [Save] → [Index 1-5] menu.
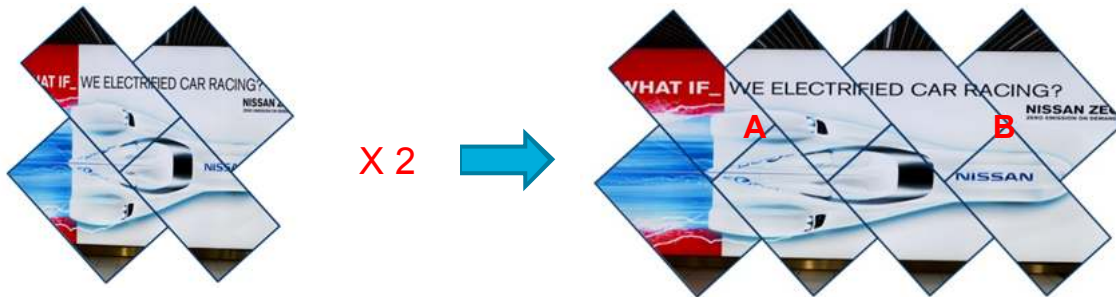
Note:

1. *During [Overlap] adjustment, the image may have frame tear because the parameter is just temporary store in the system. Once the system has been powered OFF/ON again, the settings will be stored into the system and frame tear phenomenon will disappear permanently and will not happen again.*

2. *Please enable [Frame Lock] function under [Options]→[Setting] menu to make sure all G-403 will synchronize with the signal without frame tear or image lag. Default is [Enable].*

8   Multiple contents in cascaded display

User can select different input source for Display Unit A & B and set video wall [Zoom] H=1, V=1 in both G-403 to display different contents in the video wall. It can be saved into another Profile [Index]. User can switch between different Indexes to show different displays—one content or dual contents in the video wall.
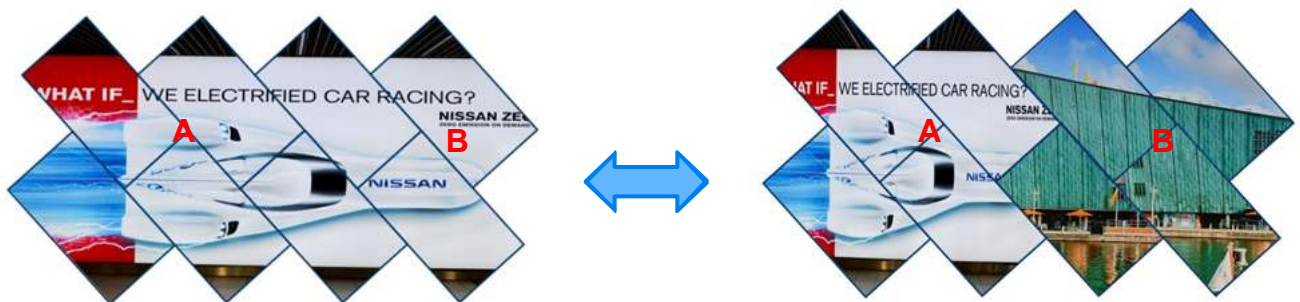
User can use PIP/POP function to add more display content in each display zone. In this case, the maximum display contents will be up to 4 in the above video wall.

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9 Examples for cascaded display

* 2x Mode 35/36, recommended signal source resolution: 1920*2160

1	**2**	**3**
1	**2**	**3**
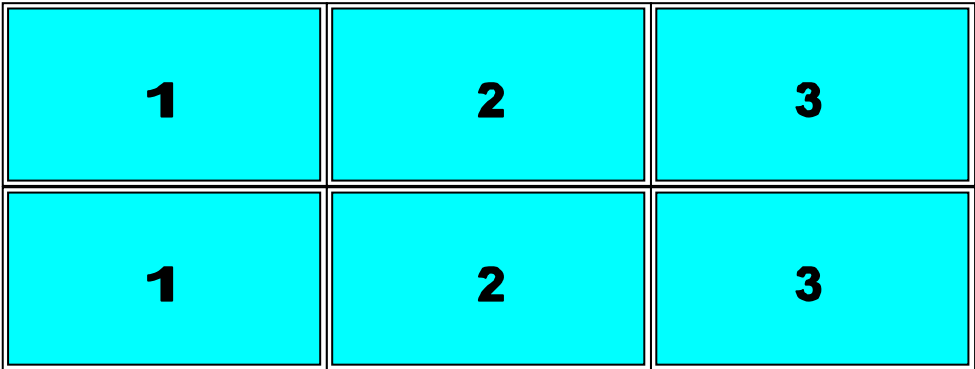
* 3x Mode 35/36, recommended signal source resolution: 1920*2160

1	**2**	**3**
1	**2**	**3**
1	**2**	**3**
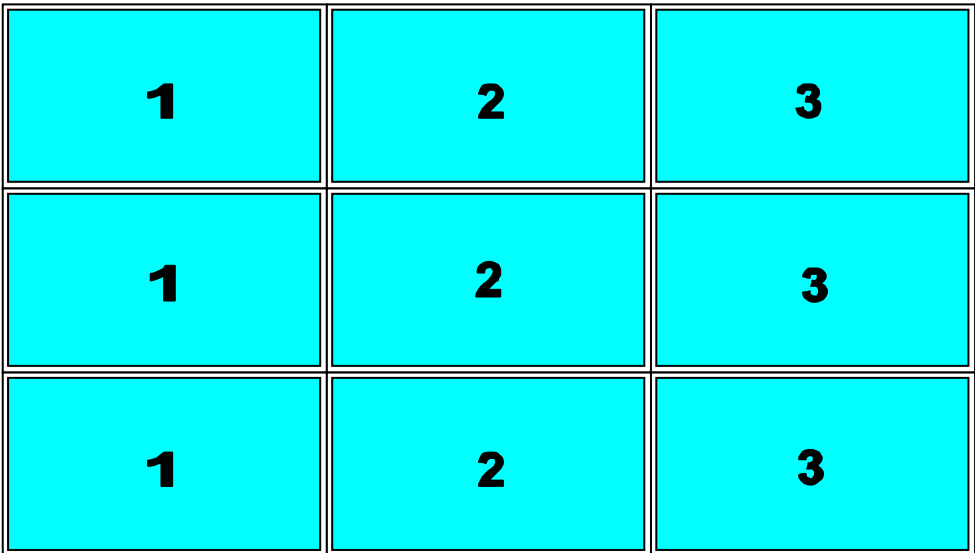
* 2x Mode 06/12, recommended signal source resolution: 1920*2160

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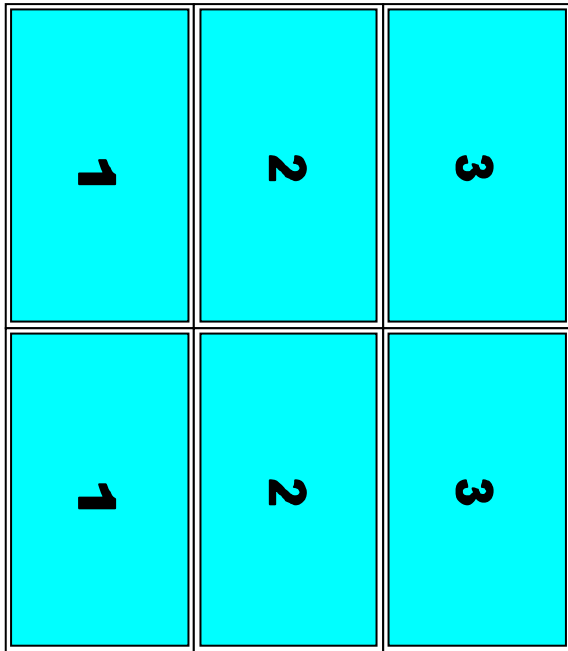
* 2x Mode 56/123, recommended signal source resolution: 1920*2160
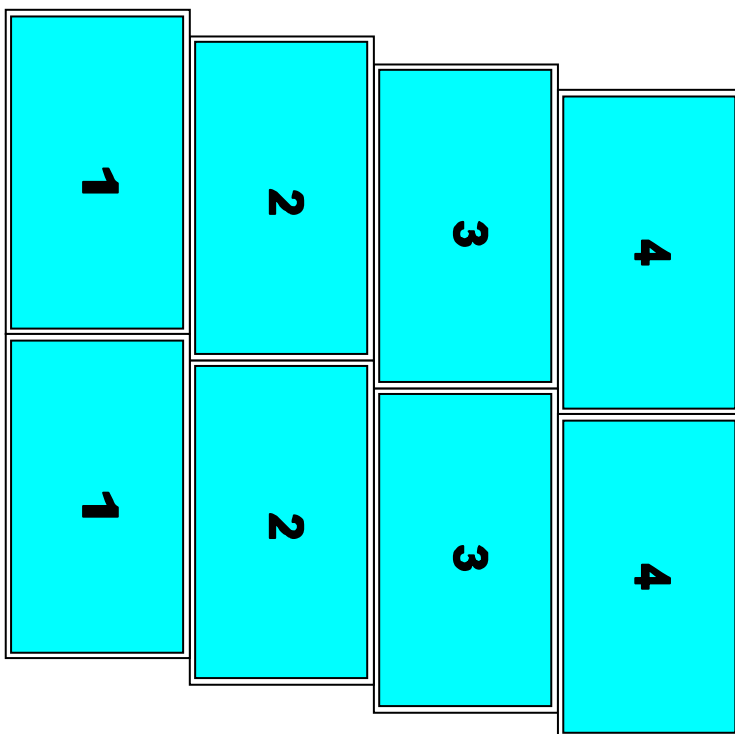
* 4x Mode 45/46, recommended signal source resolution: 3840*2160

----
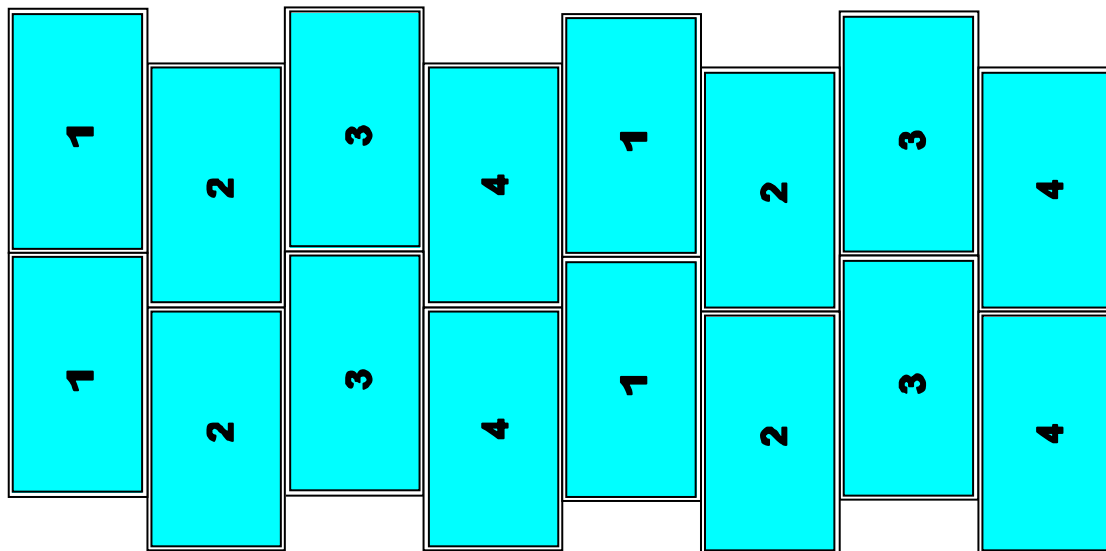
* 2x Mode 145/146, recommended signal source resolution: 3840*1080
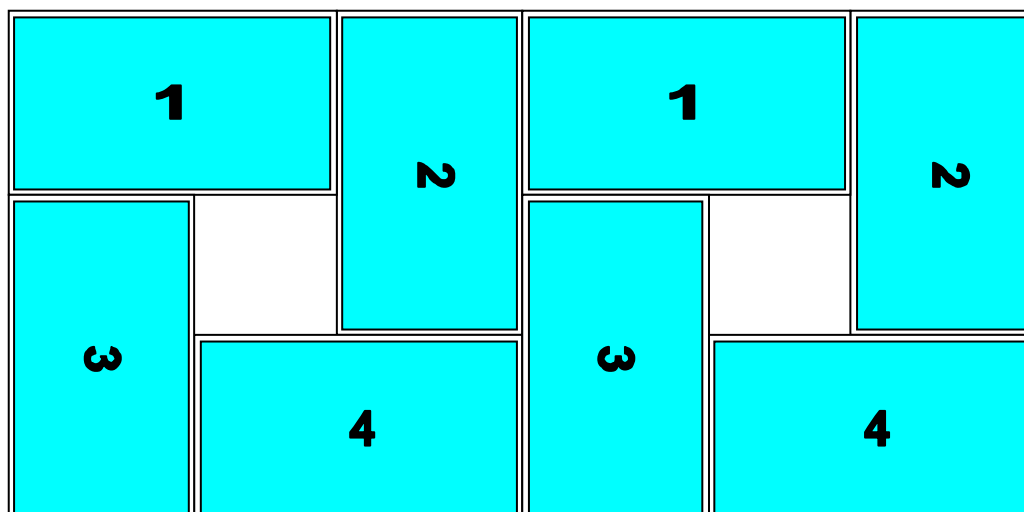
* 2x Mode 126/134, recommended signal source resolution: 3840*1080

----
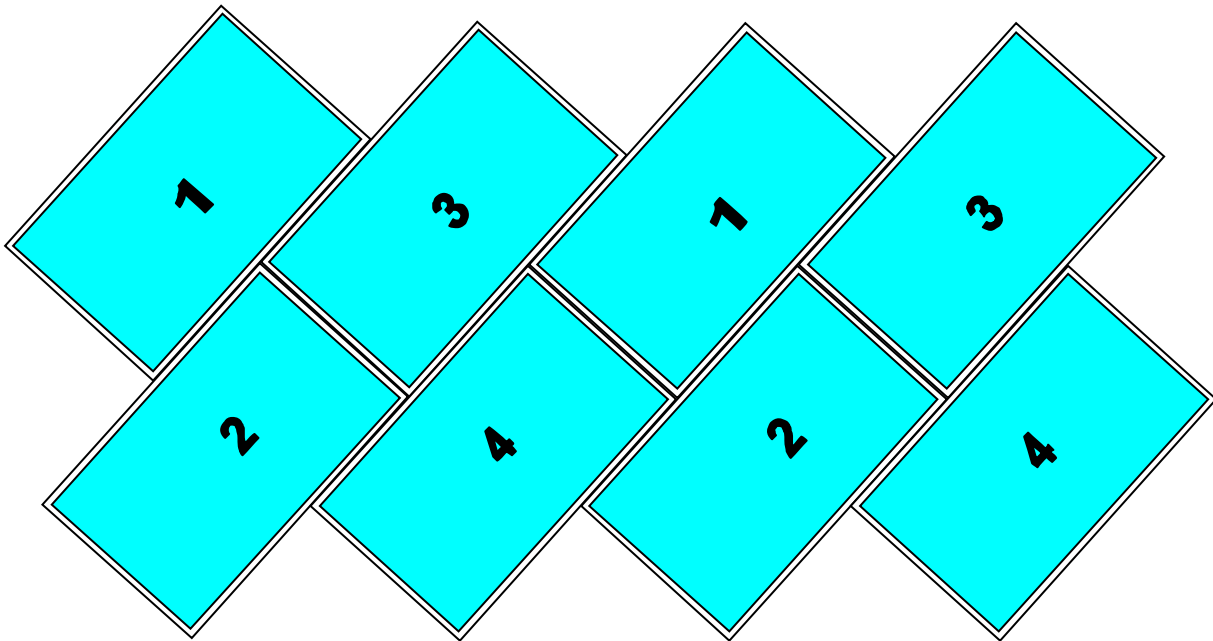
* 2x Mode 156/234, recommended signal source resolution: 3840*1080

----
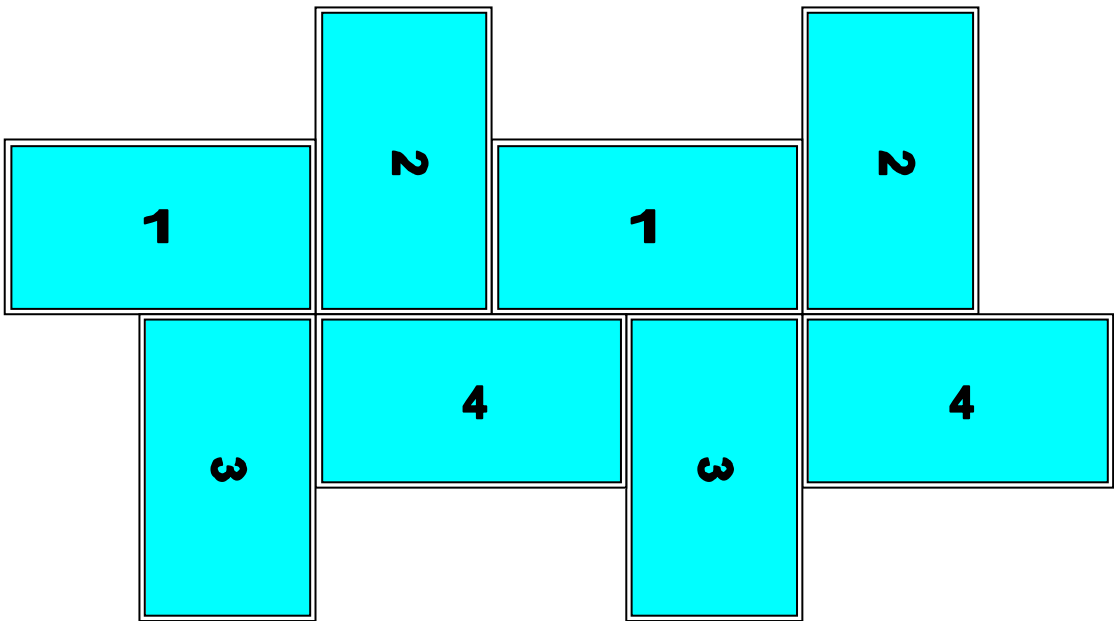
10 OSD menu and functions

Important notice:

1. *Please set all Dip SW on [Main Input] at OFF position to assign system control authority to OSD menu so that OSD setting will be executed while the system is powered ON.*

2. *If any Dip SW in [Main Input] is not at OFF position, when the system is Power ON, the system will check Dip SW setting first and execute the command in Dip SW setting if the setting is conflicted with OSD setting. If OSD setting is not conflicted with Dip SW setting, the system will still execute the settings from OSD or the setting saved in [Profile]*

3. *After finished OSD operations, please save OSD settings into Profile [Index] for long term reservation.*

4. *IR Remote Controller has Shortcut key for Profile [Index] loading function (see below picture).*

User needs to use IR remote controller to access to the IR receiver on front panel or IR extender connected to the socket on the back panel to activate OSD menu and functions.
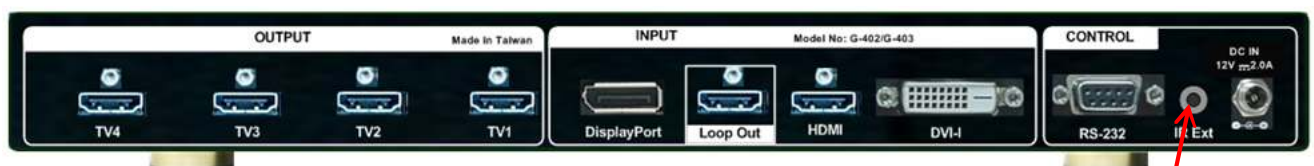
[OTH] Profile shortcut key to load Profile [Index]

 IR remote controller   IR Receiver Extender
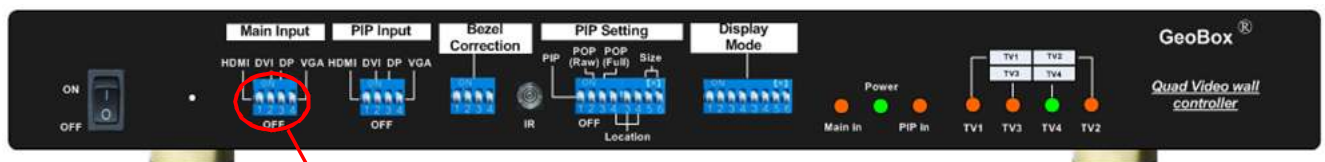
- Please set all Dip SW on [Main Input] at OFF position to assign system control authority to OSD menu settings.
- If user selects input port by Dip SW (at ON position), then when G-403 is powered ON, the system will follow Dip SW setting to show the image.

10.1 [Picture] Color Adjustment

[Picture] menu is to adjust the color properties for the entire display unit (4x LCD). It can't do individual colour adjustment for each LCD. When the input signal is in YUV domain, all the items under menu are free to be accessed. If the input signal is in RGB domain, only [Brightness] and [Contrast] can be adjusted. User can do further separate RGB individual color adjustment under [Image Properties] menu.

10.2 [Image Setup] for PC graphics VGA input

[Image Setup] menu can only be activated when video input is from DVI-I input port with analog VGA input signal.

a.   Automatic: It will do automatic image alignment inside the system

b.   Manual: manual setting for signal Phase and Clock to eliminate image noise in analog input

c.   Horizontal Position: to adjust manually the image horizontal position.

d.   Vertical Position: to adjust manually the image vertical position.

e.   When the input is VGA signal, please connect signal to G-403, then turn on G-403 for image position auto alignment. After this process, unless user applies other VGA input signal, G-403 will not do auto alignment again to avoid image shift.

10.3 [Image Properties]

[Image properties] is designed to select image colour temperature, adjust independent RGB colour, select input port, set display aspect ratio, set PIP setting and image flip/rotation. There are five sub-menus.

Five sub-menus:
- [Color]: Colour temperature selection and RGB independent adjustment
- [Input Signal]: to select input port
- [Scaling]: to set display aspect ratio, including POP display mode
- [PIP setting]: to do PIP settings
- [Orientation]: image flip and rotation setting

10.3.1   Color
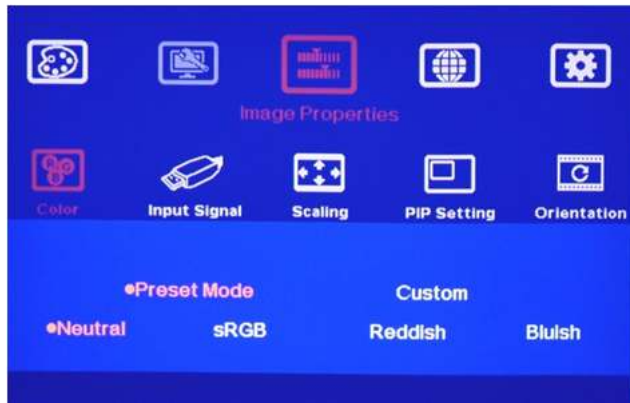
♦ Under [Colour] menu:

   4 Preset modes for colour temperature

   selection

♦ [Custom]: Independent RGB colour

   adjustment. Under this menu, if user select

   [Save], then [Picture] menu will be activated for

   access

10.3.2   Scaling

♦ [Full Screen]:

   To fit source image for full screen display

♦ [Original AR]

   To display source image with the same aspect

   ratio as source image

♦ The setting will also affect POP image display

   with full screen or original aspect ratio.

10.3.3   PIP/POP Setting (Picture in Picture & Side by Side)

♦ If user wants to keep PIP setting while system

   power on, user needs to set all [Main Input] Dip

   SW at OFF position and select input signal by

   OSD menu.

♦ Dip SW PIP/POP setting has only preset image

   sizes and positions.

♦ POP image aspect ratio shall be determined

   from [Scaling] menu.

Picture in Picture (PIP) function is to display two images from one G-403. The maximum size of the sub-image (PIP) is 1024x768 pixels. The input source for PIP is selectable and can be from any input port of G-403. The input for main and PIP image can be the same or swapped. The location of the PIP image can be controlled by OSD menu at any location inside main image. The size of the PIP image is also flexible and can be controlled by OSD menu as well. Both main and PIP image will go through high end 3D motion de-interlacing. If a PIP/POP image is required to across multiple G-403, then user can add one GeoBox G-101 at the front end and connect the output as signal source to G-403.

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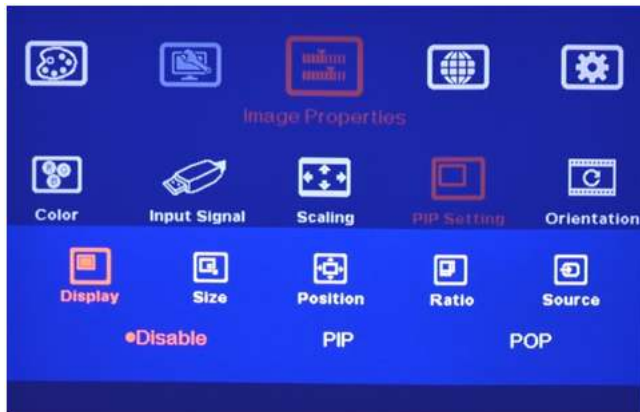
Five sub-menus under [PIP setting] menu,

--Display: enable PIP or POP

--Size: set PIP size

--Position: set PIP position

--Ratio: set PIP display aspect ratio

--Source: select input source for PIP/POP

- **Display**: Under Display menu, there are three items:
  - Disable: to Disable PIP or POP function
  - PIP: to select PIP display function

PIP (Picture in Picture) mode

  - POP: to select POP (side by side) display mode. User can select maintain original image aspect ratio or full screen mode through [Scaling] OSD menu under [Image properties]. If user set the system through Dip SW, user can select [POP Raw] and [POP Full] directly from front panel.

("POP" display mode with original aspect ratio)   *("POP" display mode with full screen mode)*

- **Size**: (Only apply to PIP function)
  - The size of the PIP image can be adjusted though [Size] OSD menu pixel by pixel.
  - The maximum size of PIP image is 1024x768 pixels.
- **Position**: (only apply to PIP function)
  - The position of PIP image can be adjusted through Position OSD menu
  - The PIP image will be maintained inside main image and can't be outside main image.
  - Pixel by Pixel PIP image position adjustment can be implemented by continuously Horizontal and Vertical position adjustments.
- **Ratio**: Aspect Ratio of the display image. (Only apply to PIP function)
  - Full Screen: the same aspect ratio as main image or

⬧ Original AR: the same aspect ratio as PIP input source.

⬧ POP image aspect ratio can be adjusted through [Scaling] under [Image Properties] OSD menu.

● **Source**: User can select the input source for PIP/POP image from all input ports. By selecting different input ports for Main & PIP/POP images, user can have different combination of the display. User can save different settings into [Profile] under [Option] menu and recall at any time.

10.3.4 Image Orientation (Flip):

● This image orientation function will be applied to entire display units (4x LCD).

● Major purpose:

  -- To create more Display Modes based on Pre-defined Display Modes.

  -- To enhance and get more flexibility in multiple G-403 cascade applications.
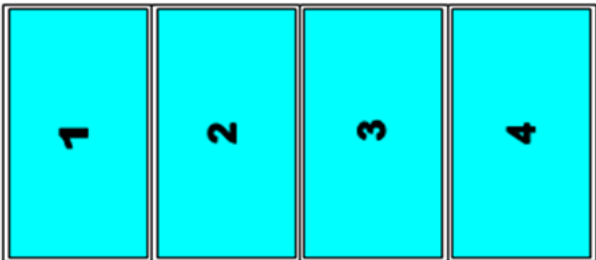
Original preset
Display Mode # 05
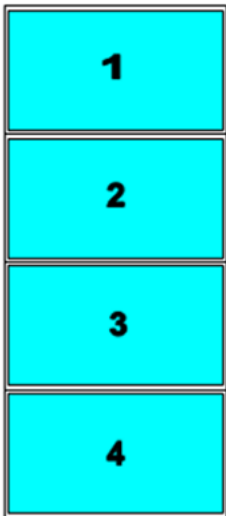
After 90° rotation
Display Mode # 05A

⬧ Display Mode #5 is preset in G-403

⬧ When user rotate image at 90°, a new display mode #05A can be achieved in G-403

⬧ 4x G-403 with Mode #5 with 90° rotation, user can get 4x4 video wall display.

⬧ User needs to provide 90° rotated content to get normal display direction in this application case.

⬧ If user uses 4x G-403 with Mode #1, then it is not necessary to rotate the image and can get the same 4x4 video wall.
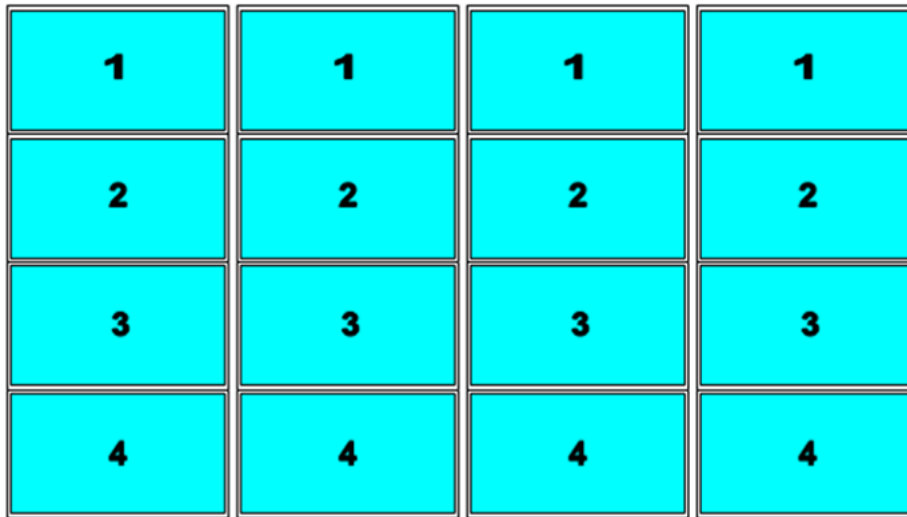
Cascade with 4x G-403 to get 4x4 4k/2k video wall

10.4 Video Wall Setting

The purpose for Video Wall Setting is output mode selection, custom mode creation and cascade with multiple G-403 to become one video wall display. It consists below functions:

- [Output Mode]: To show display modes on OSD for easy display mode selection.
- [Manual Mode]: To create any type of display modes by user.
- [Zoom]: To split source image into different section for each G-403.
- [Pan]: to assign each image section to each G-403 at the right location.
- [Overlap]: to adjust each image section at the right location in cascade application to become a large video wall display.
- The maximum video wall can be up to 15x15=225 G-403. If each G-403 is connected with 4x LCDs, then theoretically maximum number of LCD displays can be up to 30x30=900 LCDs from single signal source.

10.4.1 [Output mode]

[Output mode] is for the selection of pre-defined modes in G-403.
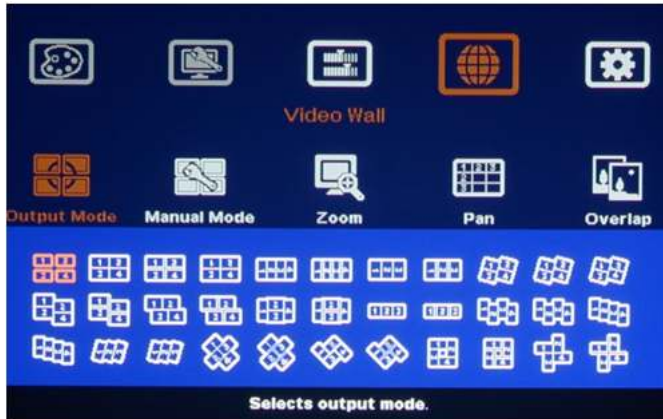
- ⬧ After select display mode, the mode # will be showed up in the OSD.
- ⬧ User can set [Display Mode] Dip SW to get the same display mode. If user doesn't set the mode in Dip SW, after turn off/on G-403 again, the display mode will be switched back to Dip SW setting mode.

10.4.2 [Manual Mode]—To create custom display modes

The purpose for [Manual Mode] is to let user create any type of display mode as he wants. Here is the structure and concept:

a.   User can create 5 different display modes and save in [Index 1-5].

b.   Each Index consists up to 4 LCD—[TV1]~[TV4].

c.   User can input two parameters (Top Left and Top Right corners coordinates) to get the display location for each TV (LCD).

d.   User can execute looping playback of display modes (Index) by selecting the Index and time interval through [Loop] menu.

e.   User can adjust Horizontal and Vertical aspect ratio randomly through [Ratio] menu.

f.   User can shift the image location inside the video wall horizontally and vertically through [Shift] menu.

10.4.2.1   To select custom mode location

1.   Under [Manual Mode], there are 5 [Index] menu and [Loop] menu.
2.   Each [Index] represents one display mode created by user.
3.   User can apply different input source and resolution without affecting display mode settings.

10.4.2.2   To set image location for each LCD

1.   Each [Index] has 4 LCD (TV1 ~TV4) menus for user to assign image location.
2.   [Ratio] is to do further adjustment in aspect ratio and position shift in entire display (4x LCD at the same time)..
3.   [Reset] is to reset all the settings in [TV1] ~ [TV4].

----

1. Inside each [TV], user needs to input coordinates of [Top Left] and [Top Right] corners to decide the image location.
2. Total 8 coordinates required for one complete video wall with 4 LCD.
3. [Reset] will reset the coordinates to default settings in current [TV].setting.

User can manually input the coordinates for [Top Left] and [Top Right] corners through OSD menu direction keys.
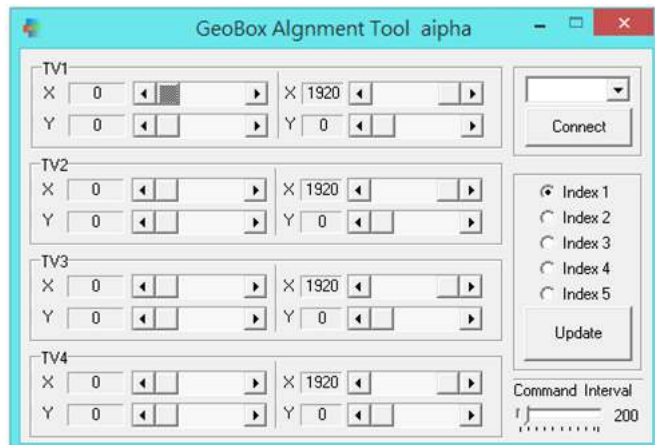
● GAlign PC tool is also available to input the coordinates for 4 LCDs (TV1~TV4) in one window. User needs to connect PC with G-403 through RS232 communication port on back panel.
● After input coordinates, user can select [Index] and click [Update] to save the settings.

10.4.2.3   To adjust custom mode aspect ratio and position--[Ratio]

● Under [Ratio] menu, user can adjust entire image display aspect ratio and shift the image position across entire video wall (4 LCD) at the same time.
● The display aspect ratio adjust range is from 50% to 200%. The result is similar to image [Zoom In] & [Zoom Out].

Note: User can also adjust image aspect ratio for entire video wall through OSD under [Video Wall]→[Overlap] menu by changing the image capture range. User can easily Zoom In (enlarge) the image by reducing image capture range. If user wants to increase the capture range (Zoom Out), it depends on how many image pixel in image borders. Sometimes, it is limited to only few lines.

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1. Four item under [Ratio] menu:
   [Horizontal Ratio], [Vertical Ratio],
   [Horizontal Shift] & [Vertical Shift]
2. Four menus can work at the same time.

10.4.2.3.1 [Horizontal Ratio] adjustment

1. This function can execute Image Zoom In & Zoom Out to change the aspect ratio in horizontal direction.
2. The aspect ratio adjusting range is from 50% to 200%.
3. This function will apply to entire video wall.

(100% Horizontal Ratio)

(50% Horizontal Ratio)

(200% Horizontal Ratio)

10.4.2.3.2 [Vertical Ratio] adjustment

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1. This function can execute Image Zoom In & Zoom Out to change the aspect ratio in vertical direction.
2. The aspect ratio adjusting range is from 50% to 200%.
3. This function will apply to entire video wall.
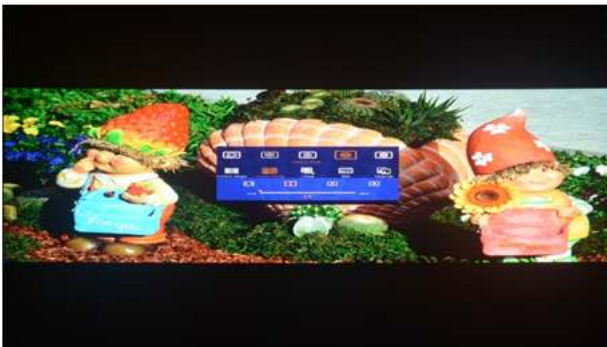
(50% Vertical Ratio)   (200% Vertical Ratio)

10.4.2.3.3   [Horizontal Shift] position adjustment

1. This function can execute Image position shift in horizontal direction.
2. The adjusting range will depend on the aspect ratio change in [Horizontal Ratio]
3. No image shift is possible if [Horizontal Ratio] doesn't change.
4. This function will apply to entire video wall.

Note:

The position shifting range is as following:

a. Maximum shift range is inside input video content.

b. If image is ZOOM IN to 200%, image can be shifted up to video wall center line—half image is missing. (see below)

c. If image is ZOOM OUT to 50%, the image can be shifted up to video wall center line—half image is blank. (see below)

(200% Horizontal Ratio)   (Max. shift to right)   (Max. shift to left)

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| (50% Horizontal Ratio) | (Max. shift to left) | (Max. shift to right) |

10.4.2.3.4   [Vertical Shift] position adjustment

1. This function can execute Image position shift in vertical direction.
2. The adjusting range will depend on the aspect ratio change in [Vertical Ratio]
3. No image shift is possible if [Verticall Ratio] doesn't change.
4. This function will apply to entire video wall.

| (200% Vertical Ratio) | (Max. shift to Top) | (Max. shift to Bottom) |

| (50% Vertical Ratio) | (Max. shift to Top) | (Max. shift to Bottom) |
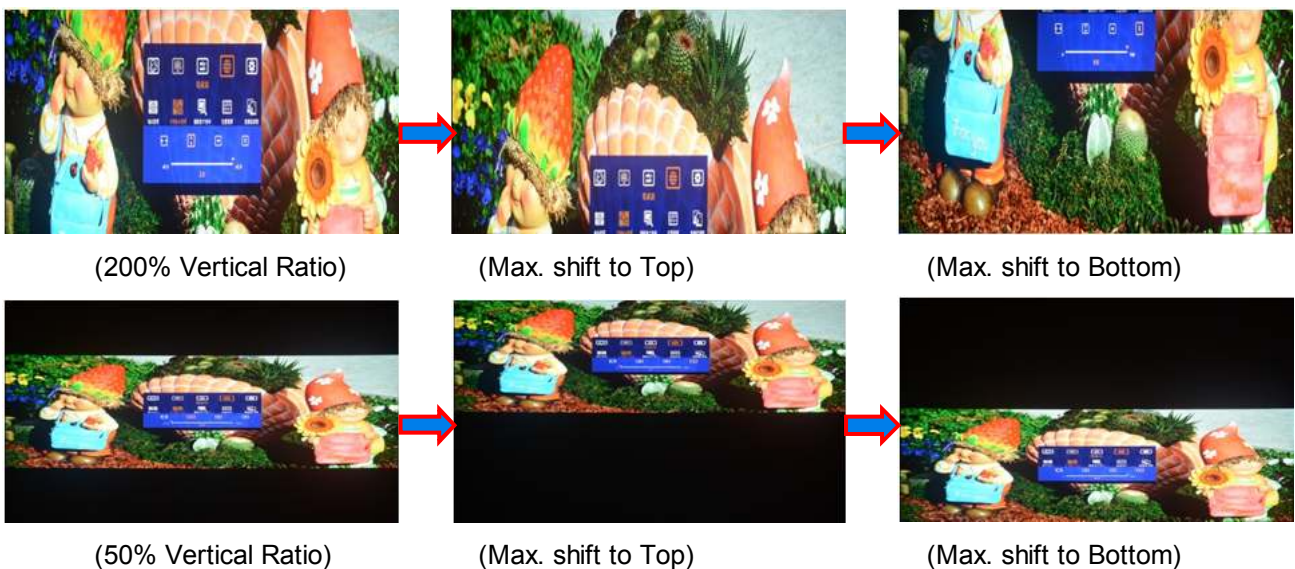
Note: By the combination of aspect ratio change and position shift, user can remove image black border or select special region of the image to highlight (pop up) specific content to attract audience.

10.4.2.4   [Loop]—Looping playback and protect LCD from burn-in mark

a.   User can create up to five different playback modes (Index) and looping playback under preset time interval. This function can be used to highlight different products from the same image content without PC system. For instance, if one content consists of 4 products. User can display all products in Index one, then pop-up product A in Index 2, product B in Index 3, product C in Index 4 and product D in index 5. After set looping playback, user will see advertisement for complete image, then highlight each product at specific LCD in sequential order.

----

b.   User can select the playback modes (Index) and time interval from OSD.

c.   Please locate the looping display modes starting from Index 1. User can only select total number of looping playback mode starting from #1. If select "3", then only Index 1-3 can be looped in.

d.   This function can be applied to create different playback mode (Index) at slightly position shift and apply looping playback function to prevent from burn-in mark on the LCD to extend the life time. This is important for the display with still image on the content.

Looping playback is only functional for [Index 1-Index 5] under [Manual Mode]. It is nothing to do with Index under [Profile] menu.

1.   User can select the Index for looping playback in [Loop Range].

2.   The Looping Index should be located from Index 1.

3.   If select "3", then only Index 1, Index 2 and Index 3 can be selected for looping playback.

1.   The time interval to switch among different Index can be set by [Loop Time].

2.   The max looping time interval is 10 minutes (600 seconds)

3.   User can create different [Index] to highlight different products from the same input source.

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10.4.2.5   Procedures to create custom video wall

10.4.2.5.1   Introduction

a、   User can create all kinds of custom display modes for regular, portrait and irregular video wall with different size, resolution and bezel LCDs at any angle and position through input the coordinates of two corners in each LCD--Top left and Top Right.

a、   4 LCD as one display unit and can be cascaded without number limitation. The display panel shall be at 16:9 aspect ratio. Different aspect ratio LCD requires customization in factory.

b、   PIP/POP function is still available in the custom modes created by user.

c、   Due to some deviation among different panel brands, even using the same size 16:9 panel, it is still necessary to check the result and fine-tune image position if necessary.

10.4.2.5.2 Collect coordinates from physical drawing

User can convert physical design drawings into 1920x1080 coordinates and pick up the coordinates at Top Left and Top Right corners in each LCD active display region, then input to G-403 through OSD or PC tool to get the result. The original point for the coordinate system is set at Top Left corner as (0, 0).
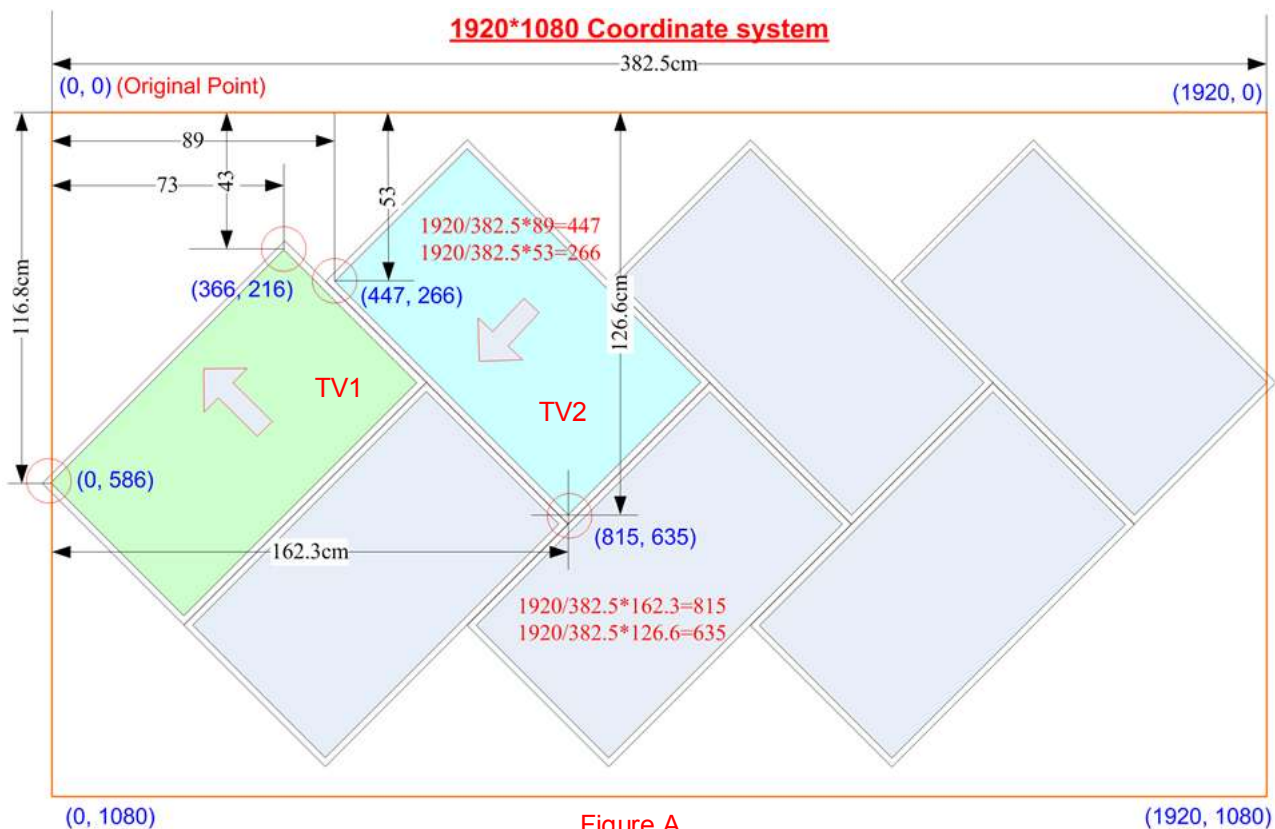

Figure A

In above drawing, the coordinates for TV1 and TV2 are as follows:

✧   TV1 coordinate for Top Left corner=(0, 586) · Top Right corner=(366, 216)

✧   TV2 coordinate for Top Left corner=(815, 635) · Top Right corner=(447, 286)

✧   Please pay attention to the display direction of the TV

10.4.2.5.3 Collect coordinates from photo

User can also take picture of the LCD array and put this photo into a 1920x1080 coordinates system and collect 8 points of the coordinates for 4x LCD, then input these numbers into G-403. The photo needs to be corrected at rectangular position then use Microsoft "Paint" to measure the coordinates. Here are the procedures:

✧   To open the photo with Microsoft "Paint".

✧   To show grid on the background for easy position selection.

✧   To select the photo and cut the photo at the edge and only reserve active display area.

✧   Re-size the photo with 1920x1080 resolution.

✧   To move the photo at the position you want to display on 1920x1080 coordinate system.

✧   Measure Top Left and Top Right corners for each LCD active display area and collect coordinates.

10.4.2.5.4 Upload coordinates into G-403 via OSD menu

✧   After collect coordinates for all LCD, user can upload the coordinated into G-403 though OSD.

✧   Example to store custom mode in Index 2:

[Video wall]→ [Manual Mode]→ [Index 2]

→ Select [TV1]→ Select [Top Left/Top Right]→ Slide bar to input Coordinates→ TV1 Done

Back to select [TV2]→ Select [Top Left/Top Right]→ Slide bar to input Coordinates→ TV2 Done

Next step is to execute the same procedures for TV3 & TV4.

✧   User may have some difficulty to see the OSD to set Coordinates. User can connect one LCD or monitor to G-403 loop out port to get full screen image for easy setting. Another way is to use GAlign PC tool to upload coordinates.

10.4.2.5.5 Upload coordinates into G-403 via [GAlign] PC tool

Below is PC tool (GAlign) for user to load coordinates of each LCD through RS232 port. Please select [Index] and press [Update] after key-in all coordinated. It will be convenient while user has difficulty to see OSD for manual upload. The result will be the same as manual upload via OSD.
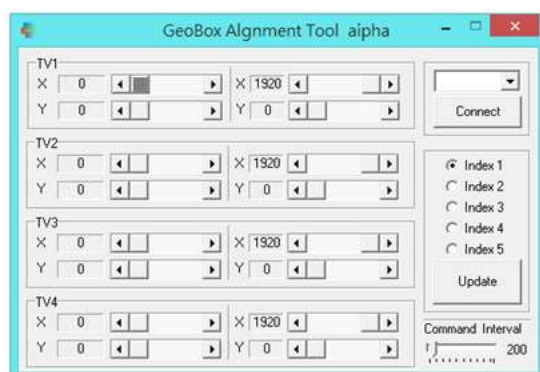
10.4.2.5.6 Create custom mode in multiple units cascade

i、 If the signal source is 1920x1080 or less, then take a picture or make drawing for complete video wall similar to [Figure A] as showed in section 10.4.6.2. Assign 4 LCD for one G-403 and the rest LCD for another G-403. Follow the same procedures as described in previous section to collect coordinates for each LCD and input to G-403 to get the display that you need. The system can still support input resolution higher than FHD but the video quality will be degraded.

j、 If the signal source is more than FHD and user wants to use higher signal input resolution. User needs to split the image into several sections in FHD size to cover the LCD display range in 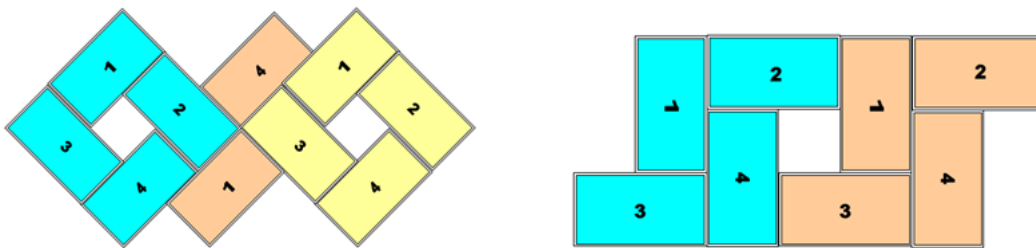each G-403. After finish the assignment, user needs to do further [Video Wall] settings to split the signal source for each G-403 (ZOOM), assign image location (PAN) and adjust image positions (OVERLAP) so that adjacent G-403 image can match together. All of the operations can be done via OSD menu under [Video Wall].

10.4.2.5.7 Create custom modes in portrait display

If the display is at portrait position, user can rotate the video wall at 90/270 degrees and collect the coordinates to build the system to get higher input resolution and better video quality. After installation, user needs to apply 90/270 degrees rotated content to get correct display angle, i.e. PC portrait display mode.
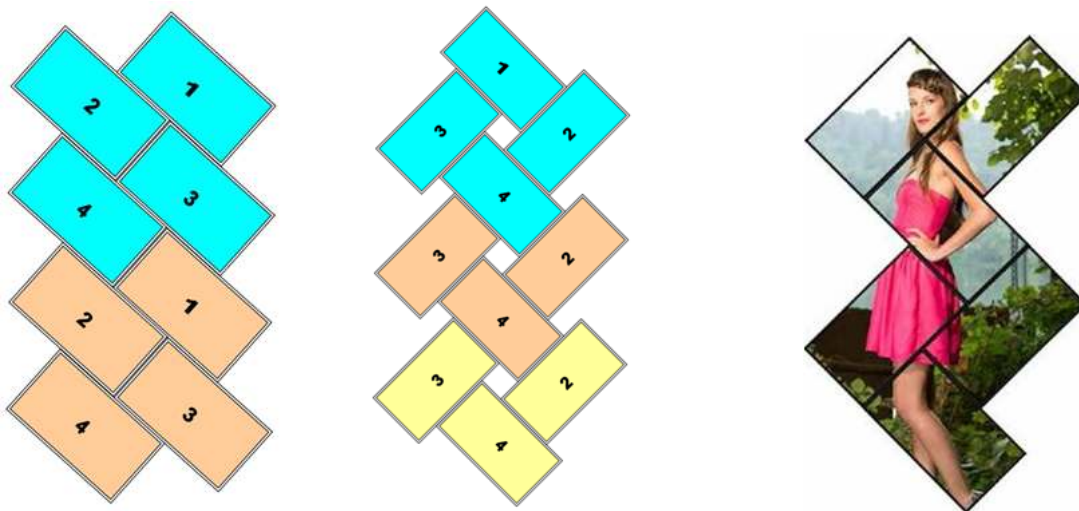
10.4.2.5.8 Save settings and image fine-tune

a、 After complete setup, user needs to feed content to the system and check the result.

b、 User may be difficult to find the operation menu in signal source or PC Desktop for operation because some content may be missing in irregular video wall display.

c、 If user can't see operation menu in video source. The easiest way is to connect one of the LCDs with G-403 loop out port so that user can see complete image for system operation and save settings.

d、 User needs to save the settings into [Option]→ [Settings]→ [Profile]→ [Save]→ [Index].

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e、   Please apply signal source to video wall and check if further position adjustment is required or not.

f、   User can use OSD for image position fine-tune. Please figure out the relation among 4 corners in a screen with 16:9 aspect ratio. If one corner is fixed, and change the position in the second corner, the other two corners image position will be also changed to show a new image in 16:9 aspect ratio.

g、   User can select different [Index] or to select different display mode under [Video Wall] → [Output Mode] menu to display full screen in each LCD for easy signal source control.

h、   User can also set input dip SW manually and turn of/on the system again to get four independent full screen displays for user to do further signal source operation. Once finish signal source operation, user needs to go back to recall Index in [Manual Mode] setting or in [Profile] to show required screen.

10.4.3   Zoom: split image for each G-403 in cascade application

- ♦ G-403 is designed with 4 LCDs as one Display Unit
- ♦ Zoom function is to split the source image content for different Display Unit in multiple G-403 cascade applications.

● *User can set both Horizontal and Vertical Zoom value based on the array of the Display Units. In below example, each number means one Display Units (4 LCDs) and also means one G-403.*

Example A:

3x1 G-403 horizontal cascade:

--Horizontal Zoom=3

--Vertical zoom=1

Example B:
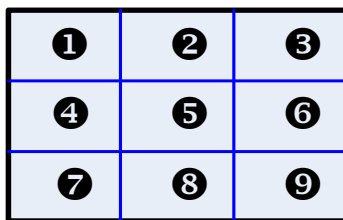
In 3x3 G-403 cascade:

--Horizontal Zoom=3

--Vertical Zoom=3

10.4.4   Pan: assign image location to each G-403 in cascade application

- ● [Pan] is to assign the split image location for each Display Unit.
- ● Horizontal value is calculated from LH to RH direction and Vertical value is calculated from top to bottom.
- ● User needs to set H & V [Pan] value to assign the image location for each G-403 to build a large video wall display.

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In 3x3 G-403 cascade application:

For No. ❸ G-403:   **For No. ❻ G-403:**

Horizontal Pan = 3   **Horizontal Pan = 3**

Vertical Pan = 1   **Vertical Pan = 2**

10.4.5 Overlap: align image position for each G-403 in cascade application

- [Overlap] is to align the location of each Display Unit (G-403)
- User can adjust the image location in H&V position up to +_900 pixels.
- Through [Overlap] adjustment, user can align each Display Unit into the right position in the video wall cascaded with multiple G-403.

The [Overlap] value will change the image capture area and scaling factor. In multiple G-403 cascade application, the [Overlap] value in each G-403 should be the same so that all images have the same scaling factor. User can use [Overlap] adjustment to change aspect ratio in video wall image as well.

10.4.6 Example for two G-403 cascade

(Please see more details in section 7)

Overlap pixels for Zone A (Display Unit A) & B (Display Unit B) shall be the same. User can set [Zoom] & [Pan], open [Overlap] menu and select [RH Edge] for Zone A & [LH Edge] for Zone B, then increase the [Overlap] value gradually in both Zone A & Zone B. User will see two images from both G-403 coming closer until the image edge match together.

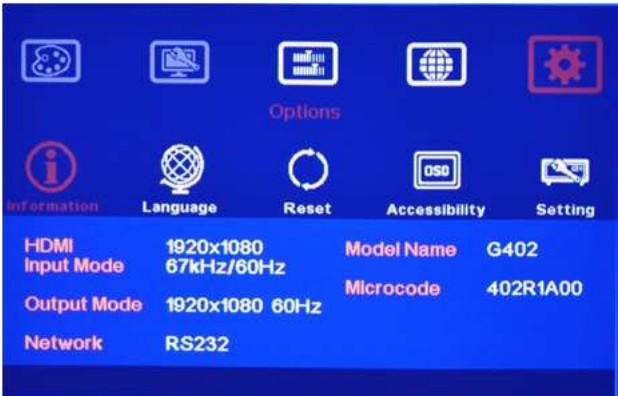
10.5 [Options]: OSD Miscellaneous Functions

Five sub-menu under [Options]:

- [Information]

- [Language]

- [Reset]

- [Accessibility]
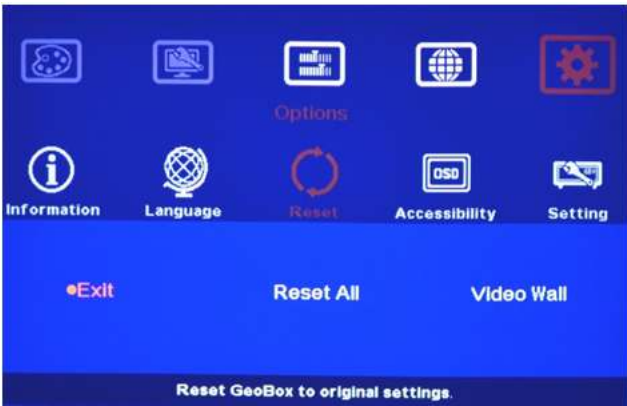
- [Setting]

10.5.1 [Information]: System Information

[Information] menu shows the following information in GeoBox, such as Input mode, output mode, Network status, Model name and Firmware version.

10.5.2 [Language]: OSD Language

Three OSD menu languages can be selected:

   English, Simplified Chinese and Traditional Chinese
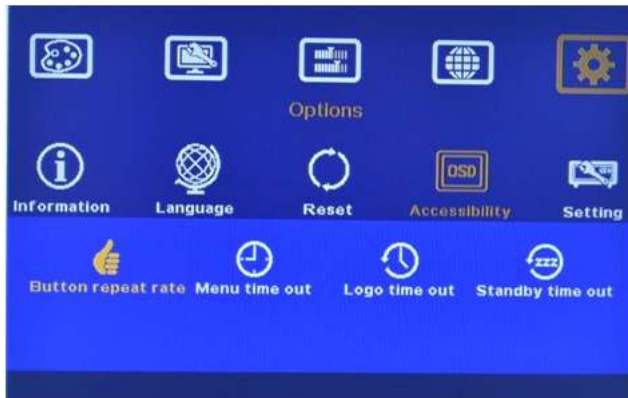
10.5.3 [Reset]

Two types of Reset can be done: Reset All & reset Video Wall.

- [Reset All] will reset all user settings but the settings stored in [Index] under [Manual Mode] and [Profile] will not be deleted.
- Reset [Video Wall] will reset the settings in Video Wall function to factory default.

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10.5.4   [Accessibility]

Four sub-menu under [Accessibility]:

- OSD [Button Repeat Rate]
- OSD [Menu Time out]
- Splash screen [Logo Time Out]
- No signal input [Standby time out]

10.5.4.1 [Button Repeat Rate]

OSD [Button Repeat Rate]:

It controls OSD button response speed while user presses OSD button continuously.

10.5.4.2 [Menu Time Out]

OSD [Menu Time Out]

- OSD menu will disappear from the screen based on time setting.
- The default time is 30 seconds.
- [OSD Time Out] shortcut key is available on IR remote controller

● When [Off] is selected, the OSD menu will remain in the screen until user activates other OSD function or input/output mode change.

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10.5.4.3 [Logo Time Out]

- To set the time to show Splash screen.
- If zero is selected, then the splash screen will not be showed during system booting up period. It will reduce the boot up time.

10.5.4.4 [Standby Time Out]

The default setting for [Standby Time Out] is 60 seconds. G-403 will automatically cut off output signal if no input signal is detected after 60 seconds. The time can be set by user. If the time is set to "0", then G-403 will not turn off the output signal even no input signal is detected.

10.5.5 [Setting]
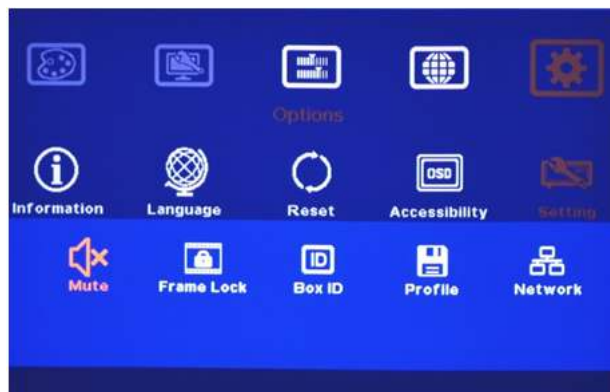
Five sub-menu under [Setting] menu:

- [Mute] Audio mute or enable
- [Frame Lock]: system synchronization
- [Box ID]: Set control ID
- [Profile]: Save profile settings
- [Network]: set RS232 and network control

10.5.5.1 Audio [Mute]

Audio Mute:

- [Mute Off] will enable audio output.
- [Mute On] will disable audio output.
- [Mute] hot key in remote controller is available

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10.5.5.2 Frame Lock and Free Run Mode

[Frame Lock] will ensure the input and output frame rate synchronize together. This is mainly for multiple G-403 applications. If [Flame Lock] is disabled, the system will be in [Free Run] mode and keeps continuous output timing. This will provide quicker input source or input timing change under below conditions:

g.   Input signal shall have the same refresh rate (i.e. 60Hz)

h.   No HDCP compliant signal.

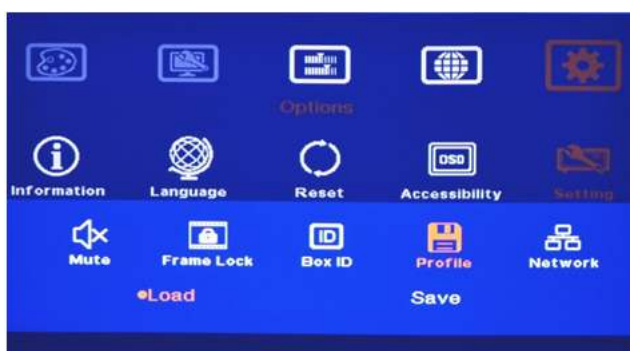It is possible to see frame tear artifact if [Frame lock] is turned off.

10.5.5.3 [Box ID]
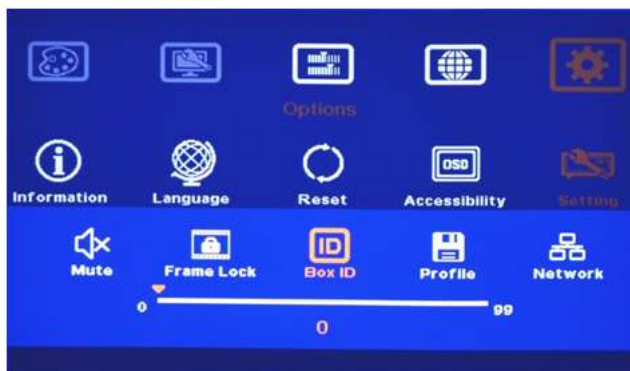
[Box ID] is identification # in each G-403 for individual RS232 or IR remote control.

* GeoBox ID No is from 1-99
* After set Box ID, user can control GeoBox individually via IR Remote controller, RS232 & Ethernet
* IR control ID # is from 0-9 only.

10.5.5.4 [Profile] Setting

* [Profile] is to save and load user settings
* If the settings saved in [Profile] are conflicted with Dip SW setting, Dip SW setting will be executed. If user wants to show [Profile] setting when turn on the system, please set [Input selection] at off (down) position

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Five indexes can be chosen to save G-403 settings and recalled by IR remote controller or RS232 through [Load] menu under [Profile]

Application example: when cascade with two G-403, user can set below display patterns:

1. To show cascade image with single content across whole video wall.

2. To show two side by side contents across whole video wall.

3. To show one PIP content in cascaded image.

4. To show two PIP contents in cascaded image.

User can save these different display patterns in G-403 and recall them by RS232 or remote controller.

Please note:

- *When execute system reset, Profile settings will remain the same without change.*

- *If the settings in Dip SW on the front panel are different from the settings in [Profile], Dip SW setting will have the 1st priority. For example, if your Dip SW selects Display mode # 02 and you select mode #05 via OSD. Once you power OFF/ON the system again, it will show mode #02 but not mode #05. The same issue will happen in PIP/POP settings, if you select a position and size of PIP image by OSD menu, once you power OFF/ON the system, it will follow the setting in Dip SW but not OSD. You need to load the profile to get new OSD settings.*

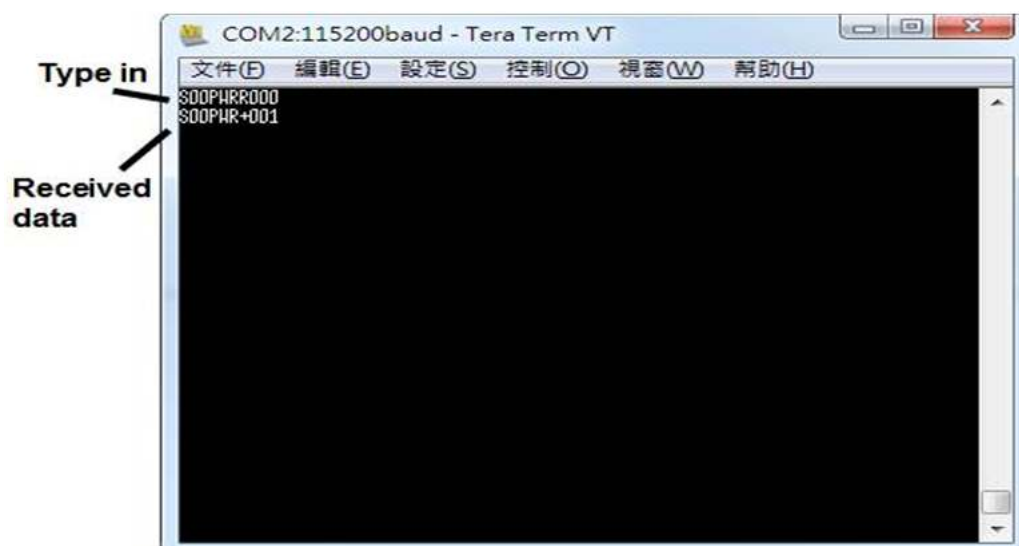**10.5.5.5   [Network]**

- Only RS232 under this Menu.
- User can use external UART to Ethernet converter to control G-403 through Ethernet control system.
- User can use simple button type RS232 controller to switch among different Profile settings.
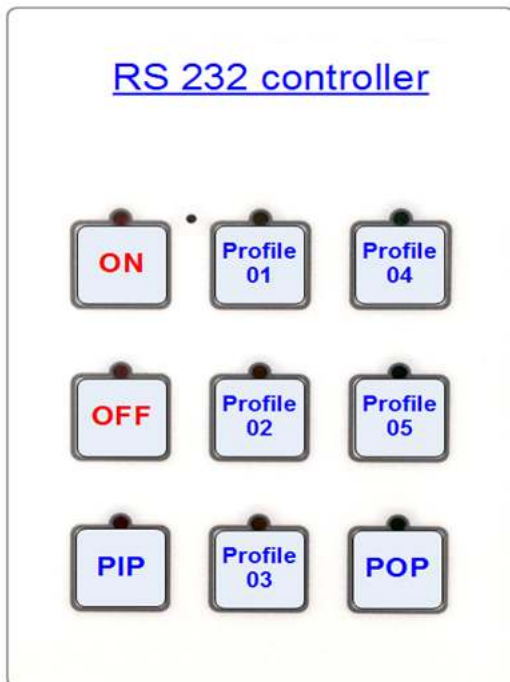
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10.5.5.5.1 RS232 setting:

a.   Serial port setup

b.   Terminal setup

10.5.5.5.2 Example of low cost RS232 controller

- ◆ User can save up to 5 settings into [Profile].
- ◆ User can connect this RS232 controller with each G-403 through RS232 cable in parallel.
- ◆ Click Profile button in RS232 controller to power on/off the system or select display Profile.
- ◆ If separate RS232 control is required, user needs to set different [Box ID] for each G-403 and put ID # into RS232 command.

10.5.5.6   [EDID] setting

Selective EDID setting is added into G-403. The purpose are as follows:

c. G-403 can support big range of input signal timing—from SVGA up to 4k/2k. In order to get the best video performance, user needs to select different input signal resolution.

d. Different PC display cards have different setting and behavier. Many users may not be able to do the right settings

e. High end media player or server can support big range of outputs—from 720p to 4k/2k. If no EDID selection function, only one default EDID can be selected by media player. The system may not show the best video wall output quality.

f. Different display modes may show different final image aspect ratio. User can ultilize different EDID setting to change input signal timing and get different output aspect ratio.

- ● Activate EDID setting menu: [Options]→ [Setting]→ [EDID]
- ● Use IR remote controller to select desired EDID.
- ● After select EDID, the PC or medial will automatically change the output timing setting.
- ● Press [INFO] key to check if the input and output timing are set correctly.

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- ◇ In very rare cases, some PC may not detect the right EDID from G-403 and show different result. If it happens, please open PC resolution setting window and select desired output resolution from PC.
- ◇ If user selects GeoBox as display device, user can choose PC output resolution up to the resolution set by EDID manually.
- ◇ If user wants to create custom output resolution in PC, user needs to select GeoBox as display device for further settings. Please select Reduce Blanking timing in high resolution output to reduce the output clock for easy high speed data connection.
- ◇ After user creates custom output resolution in PC, use needs to go back to Resolution Selection Window in PC to select the desired output timing.