G-700 Quick User Manual

(Multiple channel Curved Screen Edge Blender)

Technical support:
E-mail: sales@vnstw.com
Tel: +886-2-8751-2785 ext. 301
Cell: +886-935-678-033
Skype: vns-inc
Version: 1.03

Website: www.vnstw.com.tw

Table of Contents

1 Introduction…… 2

2 Outlook and Function…… 3

3 Helpful Tips for system installation and setup..... 3

4 Edge Blending procedures…… 5

4.1 System connection…… 5

4.2 Excel Spread Sheet calculation..... 5

4.3 Mark image location…… 6

4.4 Set overlapped region size…… 6

4.5 Projector settings…… 7

4.6 GeoBox setting..... 7

4.7 Geometry alignment by OSD menu…… 8

4.8 Geometry alignment by Gwarp2 PC tool…… 9

4.9 [Video Wall] settings..... 11

4.10 [Edge Blend] settings..... 12

4.11 Overlap color fine-tune..... 12

4.12 Black level uplift..... 12

4.13 Image quality fine-tuning..... 12

4.14 System power ON/OFF setting..... 13

4.15 Save all settings..... 13

5 [EDID] setting…… 13

6 Screen Selection…… 14

7 Projector Selection…… 15

8 Specifications…… 16

1 Introduction

G-700 is a curved screen edge blending processor with the ability to provide multiple processing channels to control from 1 to 4 projectors based on user's requirements. G-106 can provide single processing channel for one projector, G-702 for 2 projectors, G-703 for 3 projectors and G-704 for 4 projectors. It was designed for sophisticated edge blending as well as image warping, stacking, projection mapping, irregular video wall and passive 3D…etc.

Each processing channel has 3 input ports (1x HDMI, 1x DP, 1x DVI-I) to support 5 input formats (HDMI, DP, VGA, DVI-D, YPbPr) and one HDMI output port. One 4K HDMI loop out port is for raw signal daisy chain connection. Input ports support up to 3840x1080 @60Hz and 4k UHD @30Hz resolution with 4:4:4 full color sampling. It is integrated with 10-bit high end processor, motion adaptive de-interlace and 3:2/2:2 pull-down.

PIP (picture in picture) and POP (side by side) are standard functions in each processing channel. In one G-704, user can display up to 8 different input contents on the screen. If user requires PIP or POP image across entire screen, user can use the first channel as PIP/POP processor and connect the output to other processing channel input port to get PIP/POP image across entire screen.

Advanced warp technology is embedded in G-700. User can use front panel keypad, IR controller or PC to perform edge blending and sophisticated geometry alignment up to 17x17 grids through user friendly operation interface. Geometry adjustment range is big enough for most of the applications. By remote controller, user can adjust corner position up to H=+_600 pixels and V=+_400 pixels in full HD output resolution. If PC tool is used, geometry alignment range will be double.

It can perform color and white balance adjustment in individual projector. Edge blending region gamma correction and non-edge blending area black level uplift are also standard function in G-700.

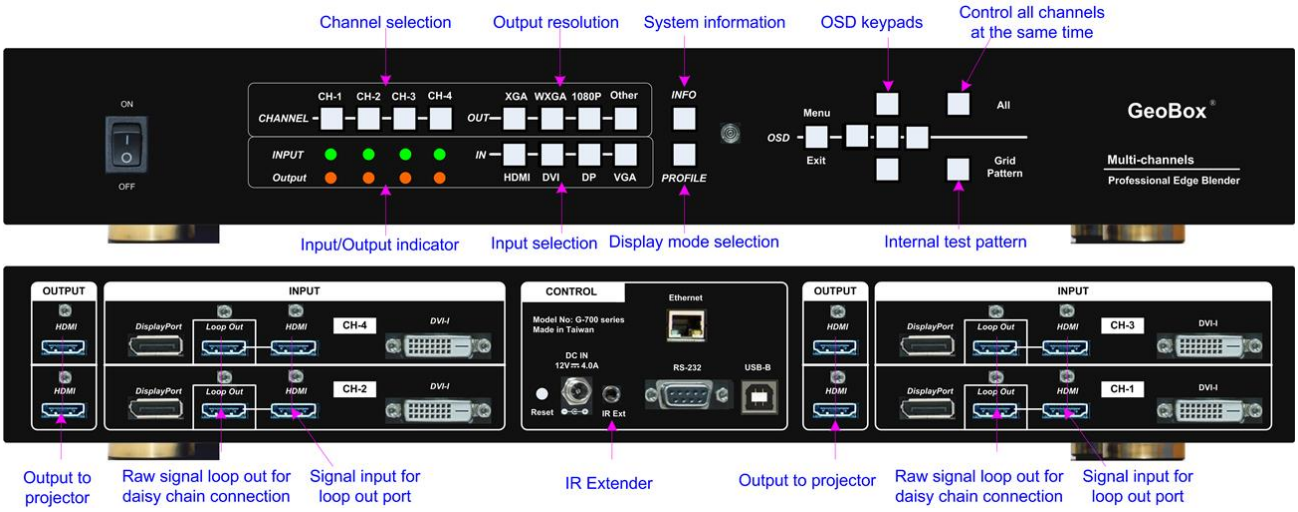
HDMI loop out supports daisy chain connection up to 3840x1080 @60Hz or 4k/2k @30Hz and allows large display with multiple G-700 cascaded without video distributor. Video wall function in G-700 is to crop and allocate source image for each projector. Complete curved edge blending can be achieved without PC, video distributor and splitter.

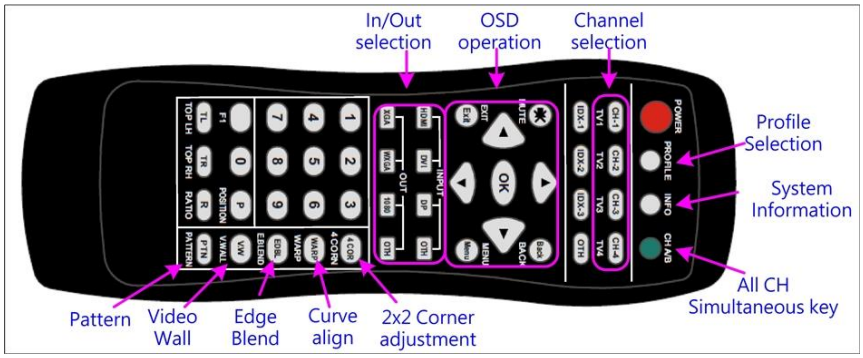
G-700 is an ideal solution for simulation. It can connect with inputs from multiple PC and combine them into one seamless image. It also provides flexible displays in edge blending system. For a 3x projector edge blending system, user can configure as 1+1+1 independent display, 1+2 (two edge blends) and all-in-one (three edge blends). User can also execute edge blending with projector at portrait position to increase image height. It is a good fit with laser projector without the limitation in installation angle.

In order to optimize video performance, G-700 is designed to support non-VESA standard input timing and allow user to create any EDID timing in the range between 1024x768 and 3840x2160.

With G-700, users can replace high end projector with low cost projector without lens shift, warp and edge blending. It provides easy configuration, low entry barrier, cost effective, reliable and flexible solution.

2 Outlook and Function





3 Helpful Tips for system installation and setup

a. Select digital input to get better image and avoid image position shift.

b. If 4k signal connection distance is more than 10m, please select a certified HDMI cable to avoid unstable signal connection. Usually [High Speed HDMI + Ethernet] cable will be better.

c. The quality for signal adapter or converter, such as HDMI to DVI adapter and DisplayPort to HDMI converter, may downgrade the signal quality and cause issue. Please select qualified ones.

d. If user can see [Power Saving Mode] message, it means the signal connection between projector and GeoBox is OK but no input signal detected by GeoBox.

e. If user can't see [Power Saving Mode] message or splash screen, please check the connection between GeoBox and projector. User can connect to a monitor to check the output from GeoBox.

f. The output resolution setting shall be the same as projector native resolution to get the best video quality. After geometry alignment, this output resolution can't be changed. Otherwise, geometry position will be shifted and required further adjustment.

g. In the application with short throw ratio projector on curved screen, it is possible that the image location is beyond the maximum adjustment range in manual adjustment. In this case, Gwarp PC tool is required to double the adjustment range.

h. During installation setup process, please apply FHD signal to the system for easy setup. After finish the setup, user can select optimized EDID from OSD menu to get optimized video quality.

i. The optimized EDID resolution should be the final resolution after edge blending. For instance, if user uses three XGA projectors for edge blending with 250 overlapped pixels, then the best signal for this setup will be 1024*3-250*2=2572. It means 2572*768 will be the best signal resolution for this setup. User can customize EDID with this resolution in GeoBox. Some PC may not be able to output the same custom resolution. In this case, user needs to set PC output resolution as close this timing as possible. GeoBox can support none-VESA standard input timings.

j. In addition to the resolution settings, user needs to provide a content with the same aspect ratio as screen to ensure no distortion on the screen.

k. To reset all projectors before edge blending to get the same settings in all projectors.

l. To turn off auto keystone function to avoid image shift.

m. In order to avoid interference among multiple GeoBox during the installation, user can set ID number for each GeoBox through [Options] Menu. Press number keys in Remote Controller for the control of multiple GeoBox:
   - ✓ 850: simultaneous control for all GeoBox
   - ✓ 851: control GeoBox ID No. 1
   - ✓ 853: control GeoBox ID No. 3

n. OSD Lock / Unlock: When continuously press [OKD Lock] key on Front Panel or [Menu] key in IR Remote Control for 5 seconds, the OSD function will be locked to prevent from setting change by negligence. To press [OSD Lock] key or [MENU] key for 5 seconds again, it will unlock OSD and user can manipulate the OSD again.

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

p. Please reset GeoBox before any new application to avoid unexpected settings in the system

q. To set [Menu Time Out] will decide the OSD and test pattern show up time.

r. Default Internal Grid Pattern represents 32x32 pixels no matter which input resolution is selected.

s. Only HDMI-A input port can provide HDMI raw signal loop out for daisy chain connection. This loop out signal has no any processing.

t. When [Gwarp] PC tool is used, user needs to save the setting into GeoBox through the OSD menu: [Anyplace]→ [Gwarp Pro]→ select [UserMap 1-10] to save the settings. Then PC can be removed. Gwarp will provide double geometry adjustment range.

u. When Power Off/ON GeoBox, it will maintain the final settings.

v. User needs to save the final setting into [Profile] under [Options] menu for long tern storage inside the system. Even the system is reset, the [Profile] settings will be kept without change.

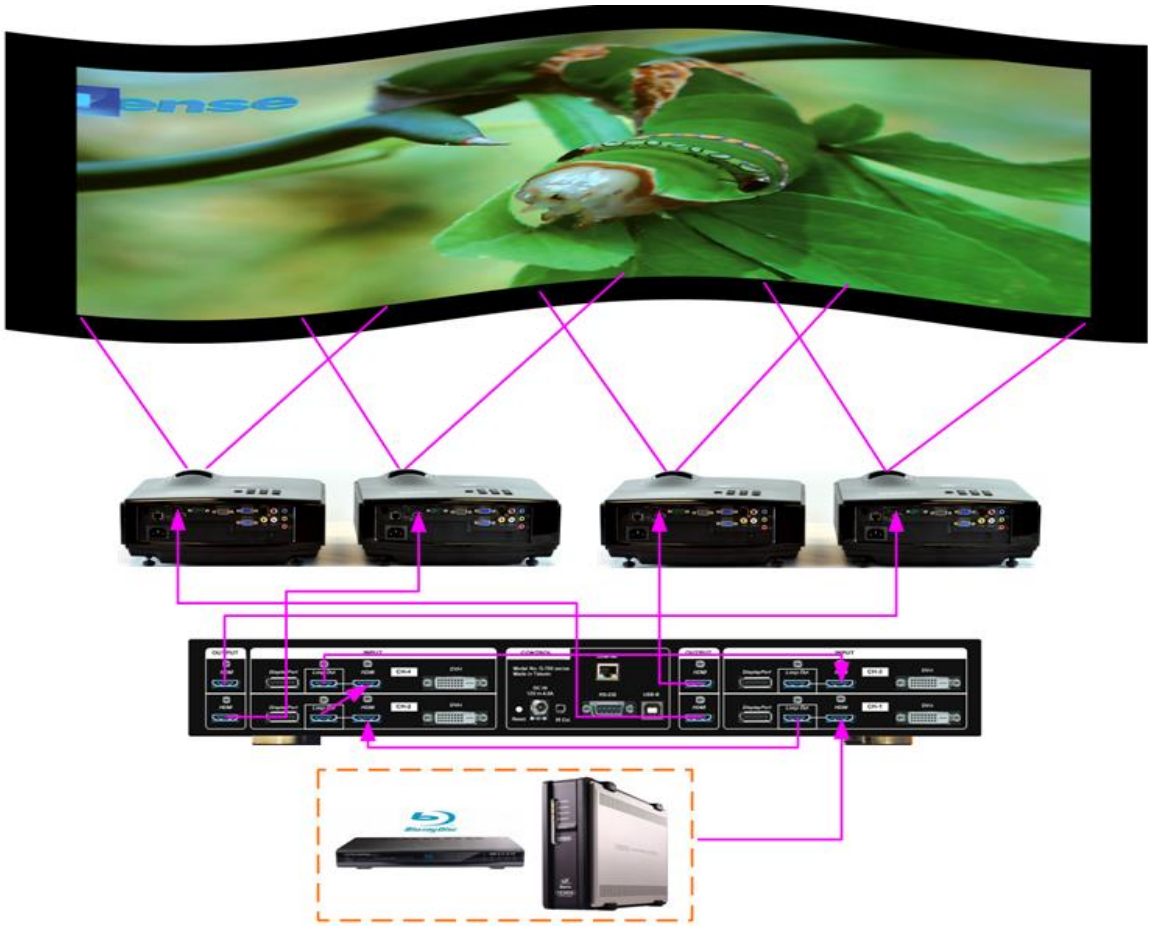
w. Continuously press PATTERN button, internal test pattern will show different colors for easy installation: White—Red—Green—Blue—Blank. When in “Blank”, user can see OSD and the image from signal source. In this case, PC test pattern can be applied.

x. Please use INFO hot key on front panel or remote controller to check the input and output timing. The indicators on the front panel will show the input/output connection status.

y. Below hotkeys are available in remote controller:
   [Warp] geometry alignment, [Video wall], [Edge Blend], [Info], [CH A/B] switching.

4 Edge blending procedures

4.1 System connection for G-704



a、 HDMI Loop Out port is for daisy chain connection. It is not an input port.

b、 Only the input signal from HDMI-A input port can be looped out.

c、 User needs to use Micro USB cable for PC & G-700 connection if Gwarp PC Tool is used. User can use USB extension cable to extend the connection distance.

d、 IF GeoBox is installed in control room, please extend IR receiver to a place for easy remote controller access. User can use audio cable Ethernet cable as extension cable up to 20 meters.

e、 User can execute G-700 OSD operation through Ethernet. Virtual keys are available.

f、 Select input port and set GeoBox output resolution to be same as projector native resolution.

g、 Connect with 1080p signal source during installation stage for easy settings. After installation, user can apply any other input resolutions.

h、 Press [INFO] hotkey to check if the setting is the same as expected.

4.2 Excel Spread sheet calculation

a、 User needs to get below data for edge blending plan:

- ✓ Number of projector.
- ✓ Projector resolution and lumens.
- ✓ Final image size for each projector.
- ✓ Overlap pixels and dimension.

- ✓ Projector installation location.
- ✓ Optimized content resolution.
- ✓ The overlap value in video wall setting.

b、 These data can be calculated through Excel program. It is allowed to have different overlap pixel among all projectors. “Irregular” Spread Sheet” is required to calculate the result.

c、 Below is the example for the calculation result. Please contact dealer or factory to get necessary assistance for these data.

Project basic data

Input resolution (H)	3840	Screen width	6.5	(m)
Input resolution (V)	1080	Screen height	1.50	(m)
Output resolu. (H)	1280	Projector lumen	3200	(Lum)
Output resolu. (V)	800	Aspect ratio	4.33	(required)

Overlap pixels (50 pixels per grid)		Overlap %	Recommended
Overlap pixel (H)	250	19.5%	20%~40%
Overlap pixel (V)	0	0.0%	25%~40%

Min. 200 pixels or 70 cm width

No. of projector (H)	3	TH ratio (Min)	1.1
No. of projector (V)	1	TH ratio (Max)	1.5

Final output resolution

Horizontal resolution	3340
Vertical resolution	800
Extended pixel (H)	96
Extended pixel (V)	0

Final result checking list (PJT: Projector)

Image size (meter)		Illuminance Lux (Lum/m2)		Single projector image	
Width	6.50	PJT lumen	3200	Width (m)	2.491
Height	1.56	Final Illumin	825	Height (m)	1.557

Overlap region size		Aspect ratio before align		Projector throw distance	
Horiz. (m)	0.487	Projector	1.60	Min (m)	Max (m)
Vertic. (m)	0.000	Final result	4.18	2.74	3.74

Based on these data, user can make a layout plan and decide the installation dimensions and locations.

Video wall setting value

No. of projector (H)	1	2	3	4	5	6	7	8	9	10
LH extended pixels	0.0	95.8	191.6	x	x	x	x	x	x	x
RH extended pixels	191.6	95.8	0.0	x	x	x	x	x	x	x

No. of projector (V)	1	2	3	4	5	6	7	8	9	10
Top extended pixels	0.0	x	x	x	x	x	x	x	x	x
Bott. extended pixels	0.0	x	x	x	x	x	x	x	x	x

4.3 Mark image location

After Excel Spread Sheet calculation, user can understand the final image position for each projector. Please mark image position by paper adhesive tape on the screen. The positions should include 4 corners of the image for each projector and horizontal center line of the screen. Please select a tape that will not damage the screen.

4.4 Set overlapped region size

a、 During Excel Spread Sheet calculation, user has some flexibility to determine the overlap region size by different projector resolution, lumens and number of projector.

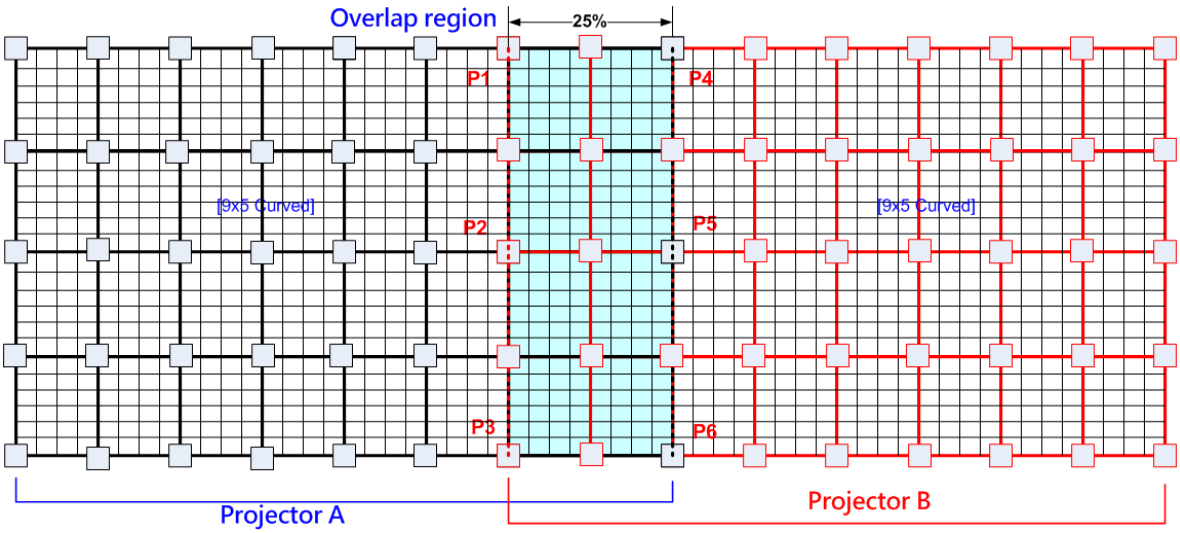
b、 Usually, please reserve 200-400 overlapped pixels or 30cm-100cm overlapped region. G-700 maximum edge blend region is 900 pixels. If it is over 900 pixels, user can change the projector installation location, lens shift adjustment, change projector display aspect ratio or reduce overlap grids by G-700 [2x2 Corner] geometry alignment.

c、 [9x5 Curved] will cut the horizontal image into 8 sections and the image in each section can be independently adjusted. In different output resolutions, there will be different pixel number in each section: XGA: 1024/8=128, WXGA: 1280/8=160, 1080p: 1920/8=240. Usually, it is enough for most of the curved screen edge blending.

d、 If the overlapped area between two adjacent projectors has the same or multiple number as above, the manual geometry alignment for grid overlap will have less flexibility. User can increase or decrease one or two grids (32 or 64 pixels) in overlap area to increase the flexibility

for accurate alignment between adjacent projectors.

e、 [9x5 Curved] alignment for two projector edge blending area as an example (in 1024 resolution):



If the overlap is 256 pixels (25%) in XGA resolution, total adjusting points are 15. User will have less adjustment flexibility. If increasing two grids (64 pixels) to 320 overlap pixels, user can have 30 adjusting points to get more accurate geometry alignment. It can align the images from two projectors on curved screen with good quality without Gwarp PC Tool.

Below is the list for the accuracy of geometry adjustment in different overlap pixels:

GeoBox output resolution	1920*1080	1280*800	1024*768
Min. adjustment flexibility	240/480/720	320/480/640	256/384/512
Max. adjustment flexibility	352/608/832	224/256/384/416/544/576	192/320/448/576

4.5 Projector settings and installation

a、 Reset projector to default setting.

b、 To disable “Auto Alignment” function if user wants to use VGA analog input signal to avoid image shift during projector switching ON/OFF process.

c、 Disable Auto Keystone function.

d、 Select a Display Mode with 2.2 gamma curve will reduce the color difference in overlap area. User needs to test with different Display Mode setting based at final color fine-tune stage.

e、 Use projector internal color adjusting function to adjustment the color variation among projectors before implement edge blending.

f、 Turn off dynamic color function to avoid color banding in overlapped area.

g、 Install projectors at a place with image size that just can cover required image area and minimize keystone to get better video quality.

4.6 G-700 Settings

a、Reset GeoBox to default setting.

b、Select correct input port.

c、Select output resolution to be the same as projector native display resolution.

d、To do [Color] adjustment for each projector if necessary.

e、Check input/output LED indicators to make sure to have correction system connection.

4.7 Geometry alignment by OSD menu

a、 Please be familiar with OSD operation from front panel and remote controller, including activate grid pattern, channel switching and shortcut keys for [Warp], [Video Wall], [Edge Blend] and [Info].

b、 [OSD Time Out] is default to ”0”. It will ensure the grid pattern will not be turned off automatically. Input mode change will disable OSD and test pattern.

c、 If multiple units of GeoBox are used and IR receivers are put together, please set [Box ID] for each G-700 so that user can control each G-700 separately.

d、 Use [Pattern] & [Channel] hot key to show grid patterns in all projectors. User can set G-700 grid pattern with different pixel size while using Gwarp.

e、 Please follow the procedures for geometry alignment: [2x2]→ [3x3]→ [5x3]→ [9x5].

f、 Apply [2X2 Corner] geometry alignment and draw the corners to expected locations.

g、 Apply [3x3 Curved] geometry alignment to do 9 points adjustment and let these 9 points at the right position in the screen. It doesn’t matter that user may still see some images are inside or outside screen border.

h、 Use [5x3] for further position alignment up to 15 points in each projector. User can align most overlapped grids together through [5x3] and may still see some misalignment in some grids.

i、 Use [9x5] to do image position fine-tune. In most of the cases, [9x5] will give very good geometry alignment. After [9x5], if user returns to [5x3] alignment, only the point same as [5x3] will be kept and all other points in [9x5] will be reset. [3x3] will have the same behavior.

j、 After [9x5] alignment, if user still can see some misalignment in overlap area, there are two methods to fix it:

- To reduce the overlap pixel through [2x2] alignment with one or two grids (each projector reduces 1/2 grid or one grid). User can have more flexibility for position alignment.
- To use Gwarp PC tool for up to 17x17 geometry alignment.

k、 Geometry alignment range can be up to 300 pixels in [2x2] + 300 pixels more in [3x3] for one corner/edge. If more geometry alignment range is required, please use Gwarp to do geometry alignment. It can double the alignment range.

l、 If user doesn’t use Excel file to calculate the image size for each projector, please try to set the same image projection height prior to geometry adjustment. In this case, the image width for all projectors will be also similar.

m、 If user finds the grid size between adjacent projectors is different. It means the projection image sizes between two projectors are different. User can adjust vertical center line position by [2x2] or [3x3] adjustment to have the same grid size.

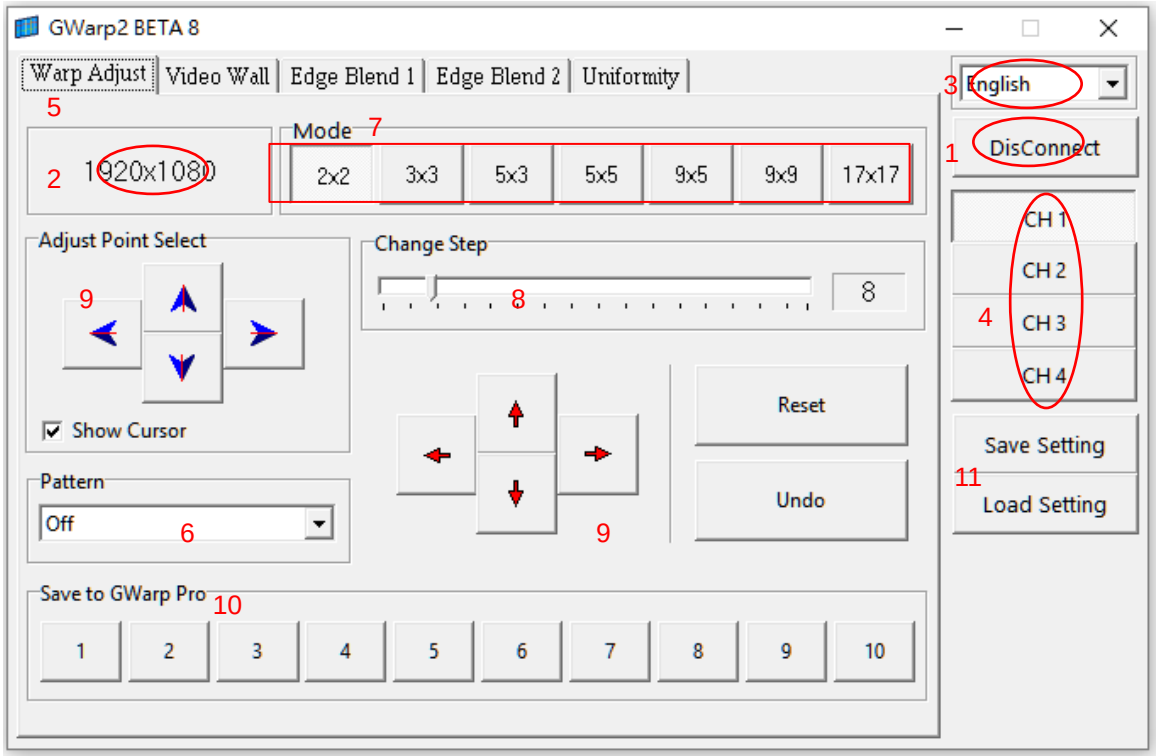
n、 In ideal condition, all grids between two adjacent projectors should be overlap together. In some special case, the vertical lines in edge blending area have some deviation and can’t

match 100% (All horizontal lines should be 100% aligned). User can adjust [Overlap] under [Video Wall] menu to compensate this deviation and keep reasonable image quality.

o、 After the above processes, if the grid pattern in edge blending area still can't stack together, then [Gwarp] PC tool should be applied. Before using Gwarp tool, please store manual settings into [Profile] temporarily.

4.8 Geometry alignment by Gwarp2 PC tool

Use USB cable to connect PC USB port with GeoBox USB type B port. No driver is required. Uniformity adjustment function is not inside OSD menu. If user wants to implement this function, user needs to use Gwarp2. Please see more details in [Gwarp2 user guide]. User can download from our website. Please contact us for any question.



a、 Open Gwarp2.exe software in PC and click [Connect] (1) to link PC with GeoBox.

b、 User will see [DisConnect] (1) and GeoBox output resolution in (2) after connection.

c、 Select preferable Language (3).

d、 Select [CH #] for the operation.

e、 [Warp Adjust] (5): for geometry alignment

i. [Pattern] (6): Open Grid pattern with different color

ii. Select mode (7) for adjustment.

iii. Select [Change step] (8) for adjusting step.

iv. Select adjusting point (9)

f、 Adjust control point position to execute geometry alignment.

i. [2x2] to draw the location for 4 corners to the desired locations.

ii. [3x3] to draw image center and edges to the expected locations.

iii. To use other grid patterns to do further geometry alignments. Please follow the step [2x2]→ [3x3]→ [5x5]→ [9x9]→ [17x17]. When [17x17] is executed and return to [9x9] adjustment, only the values at same control points as [9x9] will be reserved.

iv. User can return to [2x2] for final adjustment and the curve adjustment result will not be reset. For the rest, it will only keep the lower control point mode result.

g、 Up to this stage, the geometry result is stored in PC only. User needs to load the adjustment result to GeoBox through below procedures:

i. To save the result to GwarpPro #.

ii. Click [CTRL + P] on keyboard (or continuous press [Pattern] key on remote controller) to turn off grid pattern so that user can see OSD.

iii. Press Menu to activate OSD menu in GeoBox

iv. Select [Anyplace]→ [GawrpPro]→ [UserMap#]→ [OK]

h、 If user wants to save the result in PC, please click [Save setting] (11).

i、 Select [Video Wall] (12) to activate video wall setting menu as below.

Keyboard Hotkey for convenient Gwarp2 operation

a、 Global System Reset:

- [CTRL + Shift + R]: Reset selected channel
- [CTRL + Shift + A]: Reset all channels (from CH1-CH4)
- Input/Output resolution and Profile Index settings will remain the same without reset

b、 [Warp Adjust]

- [M]: Change Adjust mode from [2x2]→ [3x3]→ [5x3]→ [5x5]...
- [CTRL + Arrow]: Select control point
- [Arrow]: adjust value (control point position)
- [Shift + Arrow]: Geometry adjustment with 1 pixel/step
- [P]: Enable grid pattern with different colors (R, G, B, C, M, W)
- [CTRL + P]: Disable grid pattern

c、 [Uniformity] procedures

- Click [Enable] to execute uniformity function
- [Arrow]key to move control point to the location for uniformity adjustment
- Set Uniformity value in GAIN
  - [S]: to increase GAIN value with small step (about 0.001)
  - [X]: to increase Gain value with large step (about 0.5)

- [A]: to decrease GAIN value with small step (about 0.001)
- [Z]: to decrease GAIN value with large step (about 0.5)

- Set Uniformity value in Offset
  - [F]: to increase GAIN value with small step (about 1)
  - [V]: to increase Gain value with large step (about 10)
  - [D]: to decrease GAIN value with small step (about 1)
  - [C]: to decrease GAIN value with large step (about 10)
- [Space Bar]: Execute uniformity adjustment at current point
- [CTRL + Arrow]: Execute uniformity adjustment to the target point
- Example to change different locations for the same uniformity adjustment
  - [Arrow]: Change to new position.
  - [L]: Recall previous Uniformity setting value
  - [CTRL + Arrow] to execute uniformity adjustment
- Example to copy uniformity settings value from one location to another location
  - Move [Arrow] to the location to copy the value
  - Press [Space Bar] in keyboard to get the value
  - [Arrow] key to new location
  - Press [L] to copy the setting value
  - [CTRL + Arrow] to implement uniformity adjust.

4.9 [Video Wall] settings

After geometry alignment, it is required to capture image for each projector.

a、 Click [INFO] to check if correct input and output timing modes are set in the system. If no input signal is applied, [Overlap] value in Video Wall setting will be wrong.

b、 [Video wall] settings for three projector horizontal edge blending as example

- ✓ [Zoom]: all GeoBox set to H=3, V=1 (default)
- ✓ [Pan]: LH projector (1^{st}): H=1, Center projector (2^{nd}): H=2, RH projector (3^{rd}): H=3
- ✓ [Overlap]: select the right edge and apply the value calculated from Excel file
  LH projector: RH edge, Center projector: both RH/LH edges, RH projector: LH edge
- ✓ For dual projector edge blending, user can use below equation to calculate overlap pixel.
  - Assumption: Input signal:1080p, G-700 output to projector: XGA, Overlap 224 pixels (7 grids)
  - Overlap value= (1920/2)/(1024-224/2)x(224/2)=118 pixels.
  - User can also adjust [Overlap] value simultaneously and see the image in edge blending area comes closer, then without double image. Two projectors shall have the same value.

c、 If user still sees some blurred image in edge blending area, please increase or decrease [Overlap] value in [Video Wall] setting to improve video quality. If the adjusting value is more than “1”, please divide this value for adjacent projectors. For example, if the value should be “2” in center projector LH edge, then please add “1” in RH edge of the 1st projector and “1” in 2nd projector LH edge.

4.10 [Edge Blend] setting

a、 Select correct Edge for the edge blending:
LH projector: RH edge, Center projector: RH & LH edge, RH projector: LH edge

b、 RED and GREEN color indicating lines will appear when increase edge blending pixels.

c、 User needs to adjust the color indicating lines to match together (green to green, red to red) and will see the final result.

4.11 Overlap color fine-tune

a、 Please activate [Gamma] sub-menu under [Edge Blend], select [Transition] and change the [Gamma] value to get the optimized video quality.

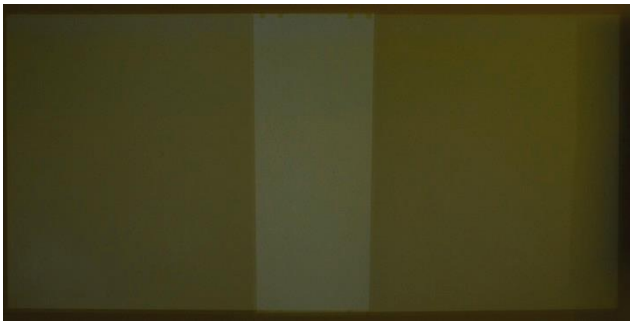
b、 [Gain] menu next to [Gamma] can do further gamma curve change in each projector. It is to do further edge blending area color fine-tune. User will see significant improvement when each projector has different gamma curve.

c、 If there is still some color difference, please adjust the color in projector first. If it is still can't fix the issue, user can use [Color] sub-menu under [Edge Blend] to adjust the color in individual projector.

4.12 Black level uplift

a、 If the ambient light is dark, audience will see grey region in Edge Blending area. It is due to light leakage from projector optical system. Low contrast ratio projector will be more serious. Please apply [Offset] menu to uplift the color in non-transition area and [Corner] menu to do accurate position alignment.

b、 Under [Offset] menu, user can try [Gain] and [Offset] color compensation to let non-transition and edge blending area to have the same color. After this step, user will see grey bars near the borders of edge blending area. User can use [Corner] to eliminate these grey bars.



4.13 Image quality fine-tuning

a、 The final performance will be a combination of many factors—projector characteristics, projector setting, screen, ambient light and GeoBox setting.

b、 Banding in overlap area under dark environment is caused by light leakage in the projector optic system. It is not possible to be fixed by signal manipulation. The only way is to raise the black

level in none transition area through [Offset] menu.

c、 GeoBox edge blending default setting is for projector with 2.2 gamma settings. To select projector display mode near 2.2 gamma setting will get the best result.

d、 The projector may retain light leakage near the border of the imager. It is not possible to be fixed.

e、 The factors affect final image quality

i. GeoBox settings:

- Edge Blending settings: Gamma, gain, Offset, Color
- Image Properties: To select Preset Mode to Neutral, sRGB or Bluish
- Individual projector color adjustment [Color] function under [Edge Blend] menu.

ii. Projector:

- To adjust image position of the projector and reduce keystone angle.
- Increase Overlap region & reduce off axis angle
- To change Display Mode, usually Standard, sRGB/Neutral will get better result.
- Try different color settings. If necessary to use 3D color adjustment in the projector.

iii. Screen: To use lower gain value screen.

4.14 System power ON/OFF setting

a、 User can access [Options]→ [Accessibility]→ [Standby Time Out] to do automatic System Power ON/OFF setting by the control of signal source.

b、 If the time is set to “60”, G-700 will automatically turn off output signals when no input signal is detected for 60 seconds.

c、 If the projector can also automatically shut down when no input signal is detected. User can control signal source to turn ON/OFF the system.

d、 If the time is set to [Off], user needs to do manual Power ON/OFF in the system as default.

4.15 Save all settings

a、 Activate [Profile] sub-menu under [Options]→ [Settings] to save the final settings. User can save up to 5 different display profiles. [Profile] menu will save/load two channel settings at the same time.

b、 After finish all the procedures, please power off and power on the system again to check if the result is the same as expected without change. If any position shift is found, please check if Gwarp value had been properly download into GeoBox.

5 [EDID] setting

Selective EDID setting and programmable EDID function are added into GeoBox. The purpose are as follows:

a、 GeoBox 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.

b、 Different PC display cards have different setting and behavier. Many users may not be able to do

the right settings

c、 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 quality.

d、 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 image 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.
- User can also create any EDID timing through the menu [Custom]. The timing range are as follows:
  H: 1024-3840
  V: 720-2160

e、 Due to PC driver issue, some PC may not detect the right EDID from GeoBox and show different result. If it happens, please open resolution setting window and select desired output resolution and set display aspect ratio from PC.

f、 User can also set non-VESA standard output timings from PC, GeoBox can accept this kind of output timing under the conditions that the maximum clock rate shall be under 300MHz and the resolution shall not exceed 4096x2160.

6 Screen Selection

a. Gain value less than 1.5 will be recommended for Edge Blending application. Higher gain value will be more sensitive to color difference among different projectors. In short throw projector edge blending, viewer may see different edge blending result while viewing at different angles.

b. Motorized screen position may be shifted from time to time. It will affect the image stacking in edge blending area and may cause blurred image. Fixed screen is recommended.

c. If ultra-short throw ratio projector is used, the screen gain value should be under 1.00 to reduce the color banding in edge blending area in different viewing angles.

7 Projector Selection and settings

a. The projectors for the edge blending should be the same model and the same production lot. If they are not the same models, it may create some difficulty and performance issue.
b. Usually, higher contrast ratio in the projector will have better black level performance. The projector with native contrast ratio more than 3000:1 is recommended for multiple projector edge blending. In a dark environment, video projector with 10,000:1 contrast ration or higher will be better. This contrast ratio should be native contrast ratio but not dynamic contrast ratio.
c. Many projectors provide a function for 3D color adjustment to fine-tune R, G, B, Y, C, M six colors. It will help the color fine tune in multiple images from different projectors.
d. All the projectors shall have the same setting—including optical zoom ratio, color temperature, color characteristics, lamp setting, display mode...etc.
e. Most projectors have different display mode for different applications, such as Presentation, Video, sRGB and User mode. Different display modes have different gamma settings and affect the video quality in overlap region. User needs to try with different display modes to get optimized image
f. The mechanical stability in optical system will be important. It should be rigid with less thermal drift. A projector with big ZOOM and lens shift will be more convenient for the installation
g. If ultra-short throw projector is used, please use a screen with gain value under 1.0 to reduce color difference in edge blending area in different viewing angles.

8 Specifications:

G-700 Independent Video input/output ports in each channel, maximum up to 4 channels in one box	1. Input in each channel a、 1x DualLink DVI-I b、 1x HDMI 1.4 input c、 1x DisplayPort 1.1a input d、 All digital input ports support 3840x2160 @30Hz, 2560x1600 and 3840x1080 at 60Hz 2. Output in each channel a、 1x HDMI outputs for RH/LH channel up to 1920x1200 @60Hz b、 1x HDMI loop out port from HDMI input for daisy chain connection up to 3840x2160 @30Hz c、 Compliant with HDCP 1.3 High-bandwidth Digital Content Protection
Image geometry correction, warp and Edge Blending (Anyplace function)	1. With full functions for 4 corner alignment, vertical and horizontal keystone correction, Pincushion & Barrel adjustment, image warp and image 180 ° flip. 2. Each unit controls 4 projectors and can be expanded with multiple G-700 to support unlimited number of projectors. 3. Full function front panel keypads and IR remote controller. Manual geometry alignment up to 9*5 grid patterns. 4. Gwarp PC Tool is available for warp and geometry alignment up to 17x17 grid pattern. After finishing geometry alignment, the parameters can be stored inside G-700 and no more PC is needed. 5. Execute 4 directions edge blending. No limitation in the number of edge blending. 6. Provide complete function for edge blending fine-tune and color correction. 7. Precise black level uplift to compensate light leakage in the projector. 8. White balance and grey level adjustment for each projector. 9. One PC tool can control 4 processing channels simultaneously. 10. Able to perform flat & curved screen seamless edge blending, including irregular curved screen and 360 degrees curved screen.
Video Wall	1. Magnify, scroll & pan through all inputs. 2. Image split, cropping and assign display location. 3. Pixel based overlap adjustment in all edges, up to 15x15 matrix displays. 4. Overlap pixel adjustments up to 900 pixels for image position shift, bezel compensation and creating overlap region for edge blending. 5. Connect with 4k/2k input signal and split the image for display devices without additional PC, image splitter or other devices. 6. Serve as video wall controller for irregular video wall display up to 15x15 matrix display from single signal input source.
High end video processing and de-interlace	1. 3D motion adaptive de-interlace for main and PIP images 2. Low angle edge smooth algorithm (similar to Faroudja® DCDi) 3. Automatic 3:2 and 2:2 pull-down film mode detection and recovery 4. True 10-bit data processing
3D stereoscopic display	1. Auto decode 3D signals for passive 3D display, including signal source from Blue Ray, STB, game console, media player and PC. 2. Auto decode Stereoscopic Player/ Nvidia 3D Vision 1080p @120Hz 3D format and Blue Ray 1080p 24Hz 3D signal into 720p/XGA 120Hz signal for active 3D display.

	3. Support standard HDMI 1.4a 3D format, including 1080p/24Hz full HD, Side by Side, Top-Bottom & Line interleaved. 4. Support 3840x1080 Full HD Side by side 3D format and SONY 1080i/60Hz frame packed 3D. 5. Zero latency in RH/LH eye image to get the most comfortable 3D. 6. Precise geometry stacking alignment and allow 2D/3D in the same setup with clear image and OSD menu. 7. 3Ddisplay can be on flat and curved screen. It can be expanded by more projector image stacking or edge blending.
Aspect ratio	1. Full screen or maintain input signal original aspect ratio. 2. Switch between 2.35:1 & 16:9 aspect ratio 3. Other aspect ratio can be changed by EDID setting and through Video Wall and Geometry adjustment function.
System control and convenient features for system integrators	1. Reliable and durable design for long term industrial and commercial applications. 2. Able to use low cost projector, no lens shift, warping or edge blend function are required 3. Full functional keypads & IR control. 4. ID # for each GeoBox. Convenient for system installation and control through IR, RS232 and Ethernet. 5. Gwarp PC tool is available to control G-700 through USB. 6. Up to 5 profile settings for flexible display modes memory and recall. 7. Integrated with IR extender (up to 20 meters), RS-232 and optional Ethernet control. 8. Automatic power ON/OFF through input signal control.
Power supply	1. External DC 12V/5A power supply 2. Auto low power standby mode
Weight	Max. 2.8 Kg (GeoBox body only)
Dimensions	440mmL x 190mmD x 60mmH