

BWM-01 GEO Module User Manual

Generic version.

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A. Installation

---Replace the BWM-01 GEO module (Depend On platform)

B. Electrical Specifications

--- Input Timing Table

Modes	Resolution	V.Frequency (Hz)	H.Frequency (KHz)
XGA	1024x768	60	48.4
WXGA	1280x800	60	49.6
480p	720x480	60	31.5
576p	720x576	50	31.3
720p	1280x720	50	37.5
720p	1280x720	60	45.0
1080p	1920x1080	24	27.0
1080p	1920x1080	50	56.3
1080p	1920x1080	60	67.5

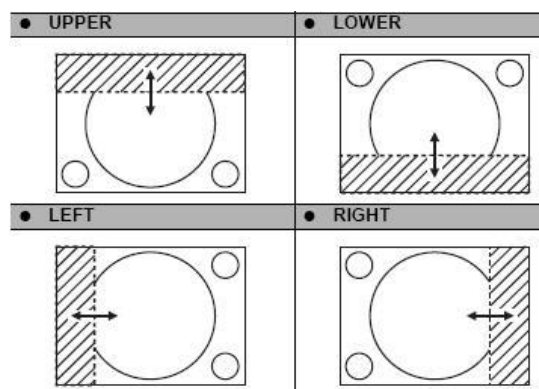
C. Functional Description

--- Top , Bottom , Left , Right Blending start position

- ※It can perform fine adjustments for blanking if noise appears at the ends of the screen or the image protrudes out of the screen
- ※Image processor can configure blending parameters in each side.
- ※The maximum blending edges are four edges.
- ※Blending start position range from 0% to 50% output width



<Fig1>



<Fig2>

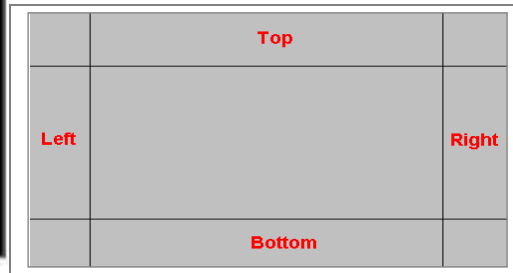


--- Top , Bottom , Left , Right Blending End

- ※Image processor can configure blending parameters in each side.
- ※The maximum blending edges are four edges.
- ※Blending range is from 20% to 50% output width



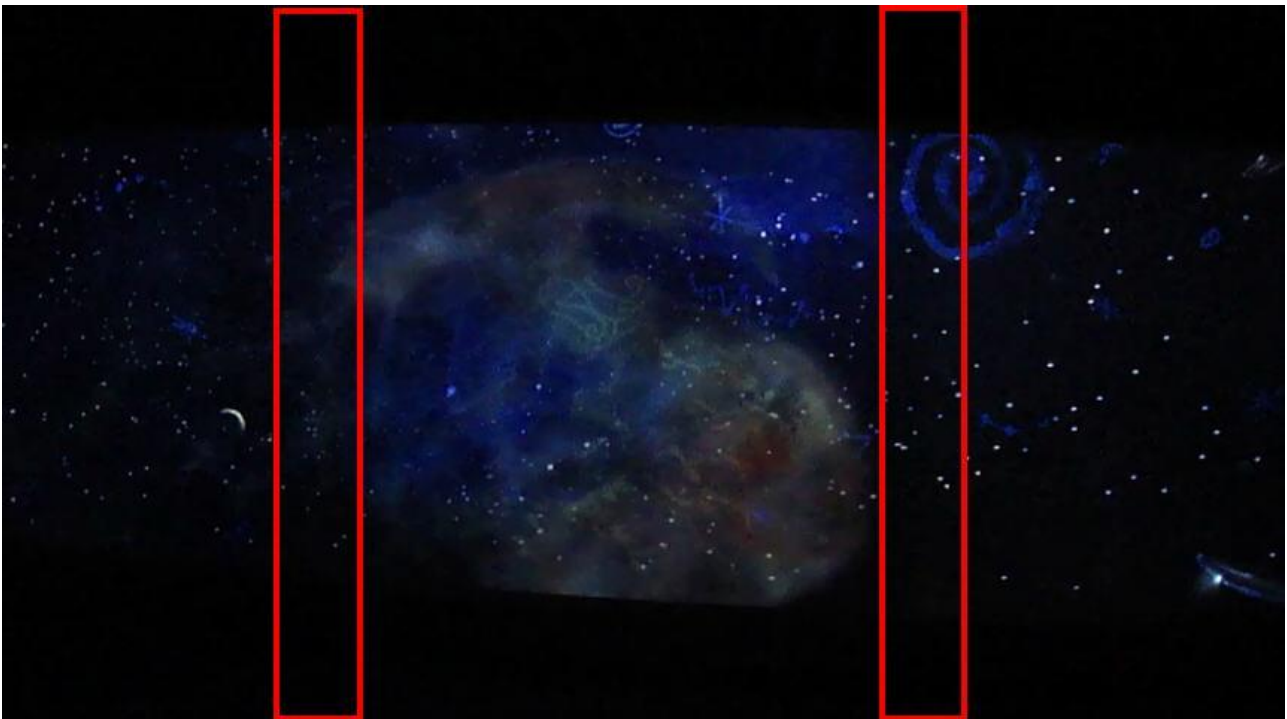
<Fig5>



<Fig6>

--- Edge Blending with Geometry combination

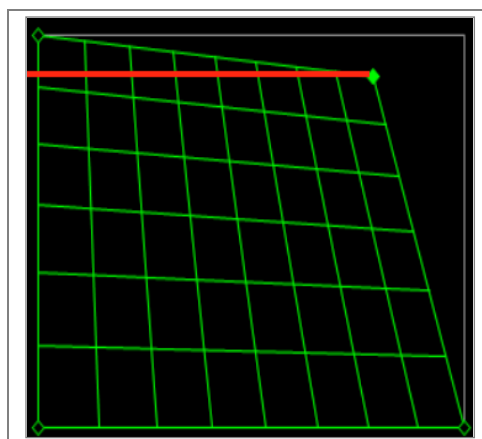
- ※ This feature must be put on flat screen.
- ※ Not supported for Vertical blending on cylinders, spherical screens and domes
- ※ Image Blending will not support VGA-out connect.



<Fig7>

--- Top Left, Bottom Left, Top Right, Bottom Right, 4 Corner position adjustment.

- ※ Image processor can configure 4 Corner position in each side.
- ※ Maximum movement must less than 5% of (output width , output height) .
- For XGA (delta x, delta y)=(-51~51 , -38~38) .
- For WXGA (delta x, delta y)=(-64~64 , -40~40) .



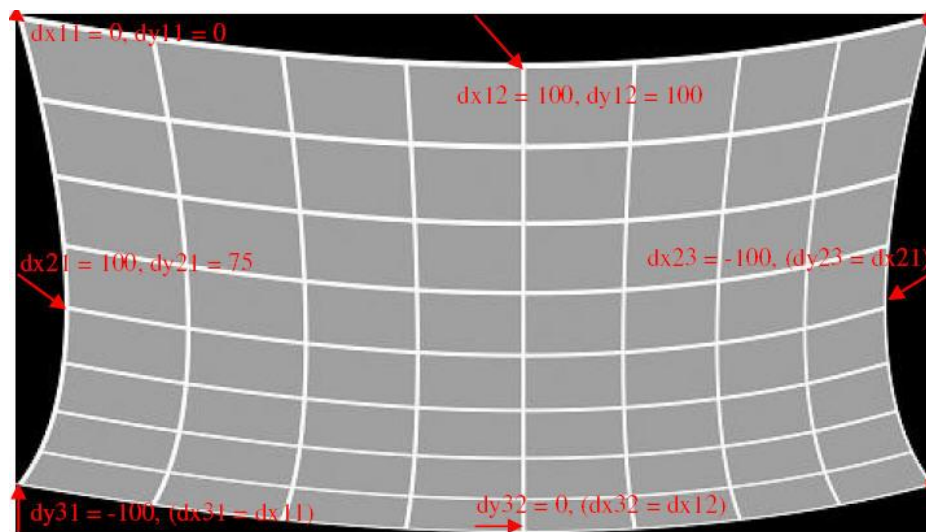
<Fig8>

---Curve adjustment.

- ※Image processor can configure curve parameters in 9 point movement.
- ※Maximum relative movement along an edge
For XGA (delta x, delta y)=(-717~717 , -538~538) .
For WXGA (delta x, delta y)=(-512~512 , -320~320) .



<Fig9>



<Fig10>

--- Barrel and Pincushion adjustment.

- ※Maximum movement must less than 20% of (output width , output height) .

--- Keystone Requirements

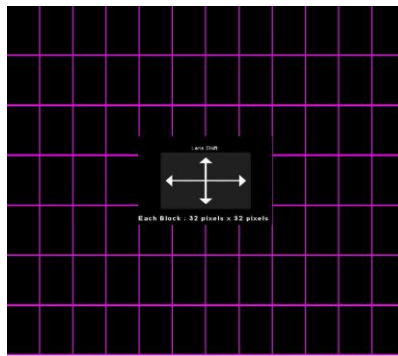
- ※Image processor can configure H and V keystone.
- ※H keystone support range is +/-40.
- ※V keystone support range is +/-40.

--- Rotation Requirement

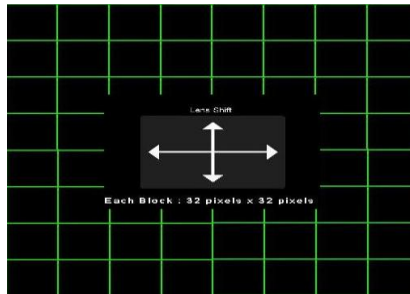
- ※Image processor can configure rotation.
- ※Rotation angles can reach to +/-90 degree.

--- Test Patterns

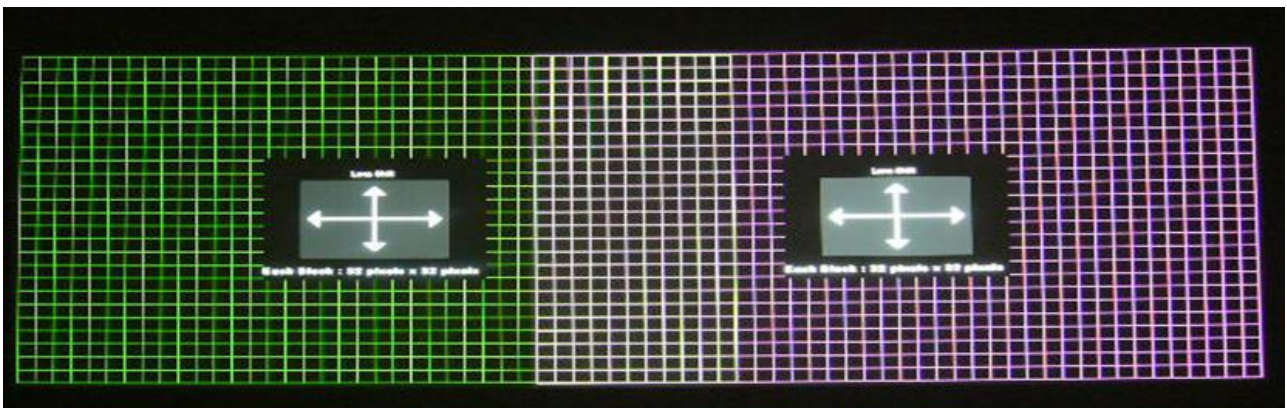
- ※Image processor can auto generate auxiliary adjustment patterns.



<Fig11>



<Fig12>



<Fig13>

Line 1 Row 1	Line 2 Row 1	Line 3 Row 1
Line 1 Row 2	Line 2 Row 2	Line 3 Row 2
Line 1 Row 3	Line 2 Row 3	Line 3 Row 3

D. Blending Tool operation

--- Blending Function on Multi-Projectors

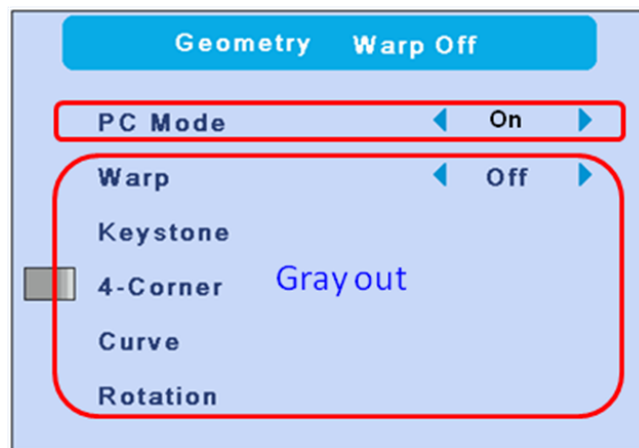
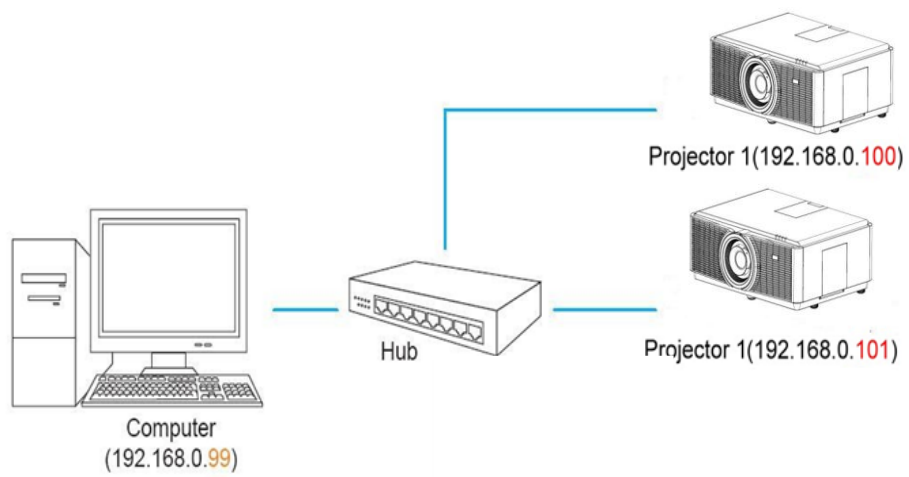
***Please make sure the projector will be set to PC mode in Geometry in OSD before used this tool.

***The projector only accept one AP, does not active AP to connect again.

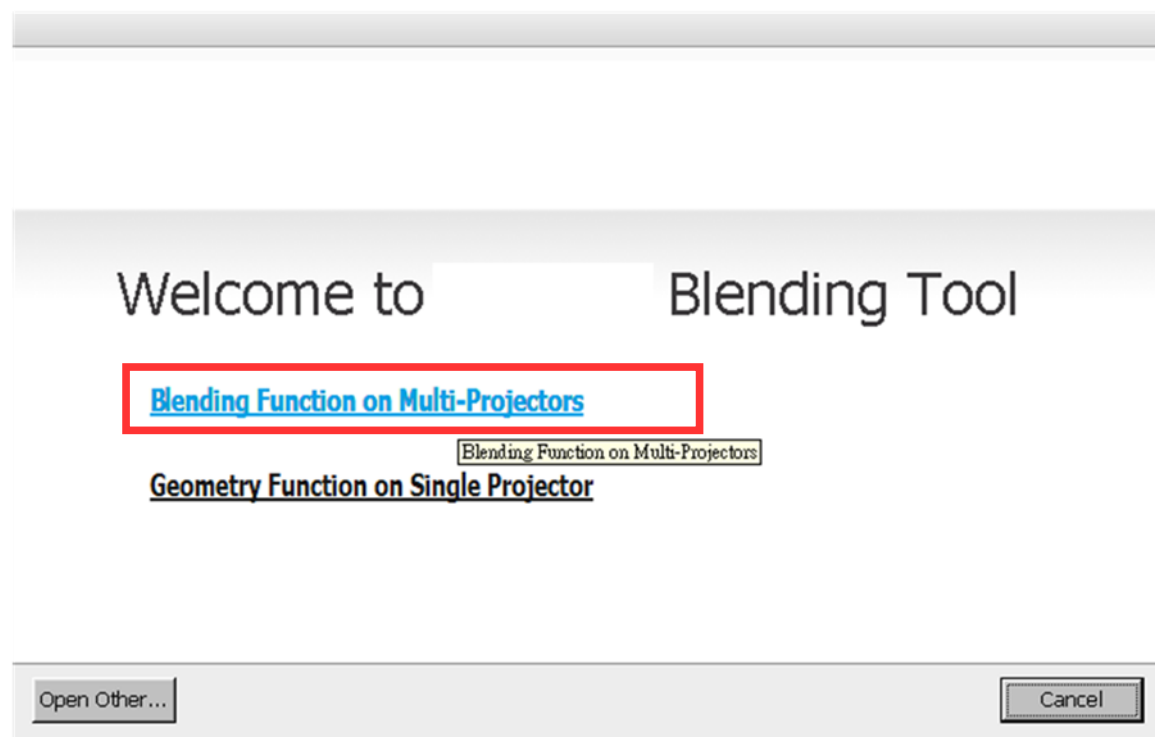
***If user want to change IP of PC/NB or projector, please close this AP then changing IP.

***If user can not connect to projector after changed IP, please press reset in OSD.

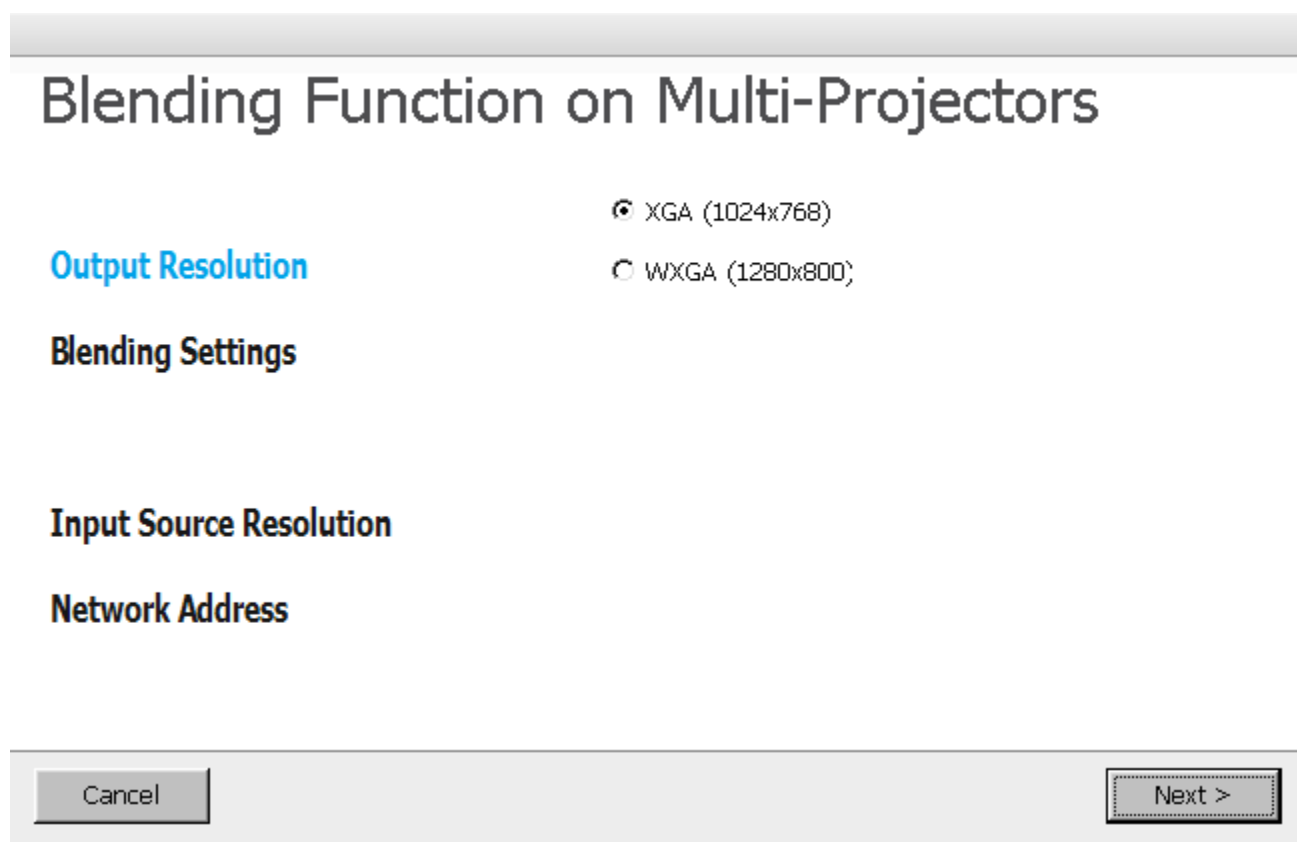
***Please turn off the internal speaker.



Step1: The user can choose [Blending Function on Multi-Projectors] to create a blending system.



Step2: to choose output resolution of projector



Step3: The user need to set number of displays and overlap area. The overlap area need to be within the range of 20-50% of output resolution. The block input item will be corrected if user click other input item. And the number of displays, It can support up to 10x10.

Blending Function on Multi-Projectors

Output Resolution

Number of Displays (Vertical x Horizontal):

Vertical: Horizontal:

Blending Settings

Overlap Area:

Left/Right: 20% Blocks

Top/Bottom: 20% Blocks

Input Source Resolution

Network Address

Cancel

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Next >

Step4: choose input source resolution. The supported timing are listed in AP's item.

Crop Function :

Yes: The image will keep ratio and Automatic cut image with correct percent for overlap of blending need at each projectors.

No: The image will fill display size Automatic cut image with correct percent for overlap of blending need at each projectors without keep aspect ratio

Blending Function on Multi-Projectors

Output Resolution

Blending Settings

Input Source Resolution

Network Address

- ☐ 480P (720x480)
- ☐ 576P (720x576)
- ☐ XGA (1024x768)
- ☐ 720P (1280x720)
- ☐ WXGA (1280x800)
- ☒ 1080P (1920x1080)

Crop Function :

Keep Aspect Ratio ? ☒ Yes ☐ No

Cancel

< Previous

Next >

Step5: fill IP address of projectors.

Blending Function on Multi-Projectors

Output Resolution

Blending Settings

Input Source Resolution

Network Address

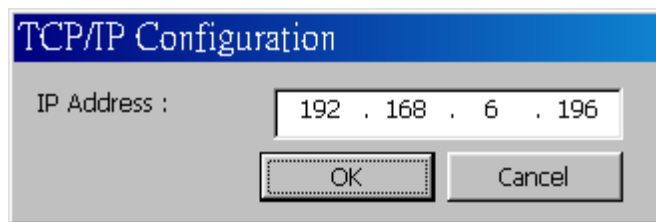
IP Address	Vertical	Horizontal	Name
192.168.6.144	1	1	Projector-01
192.168.6.196	1	2	Projector-02

Cancel

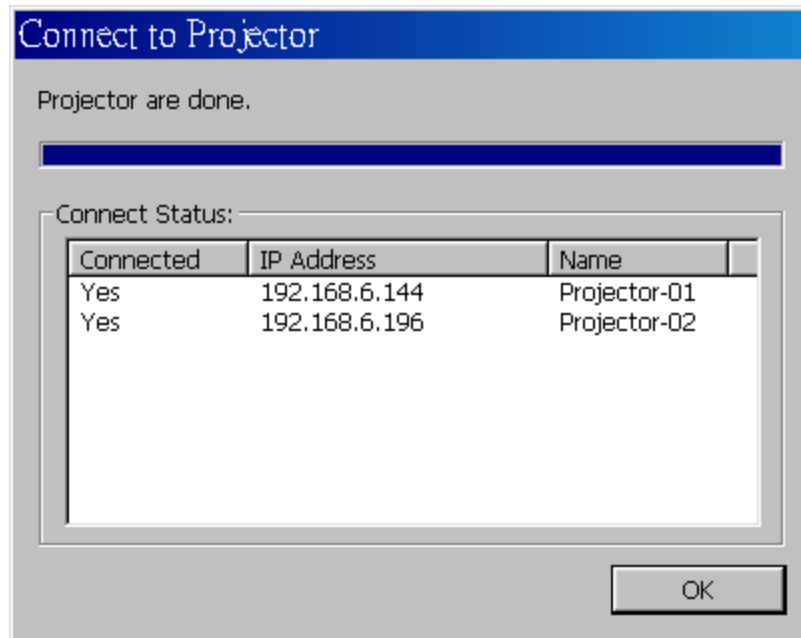
< Previous

OK

- Double click IP address to modify it.



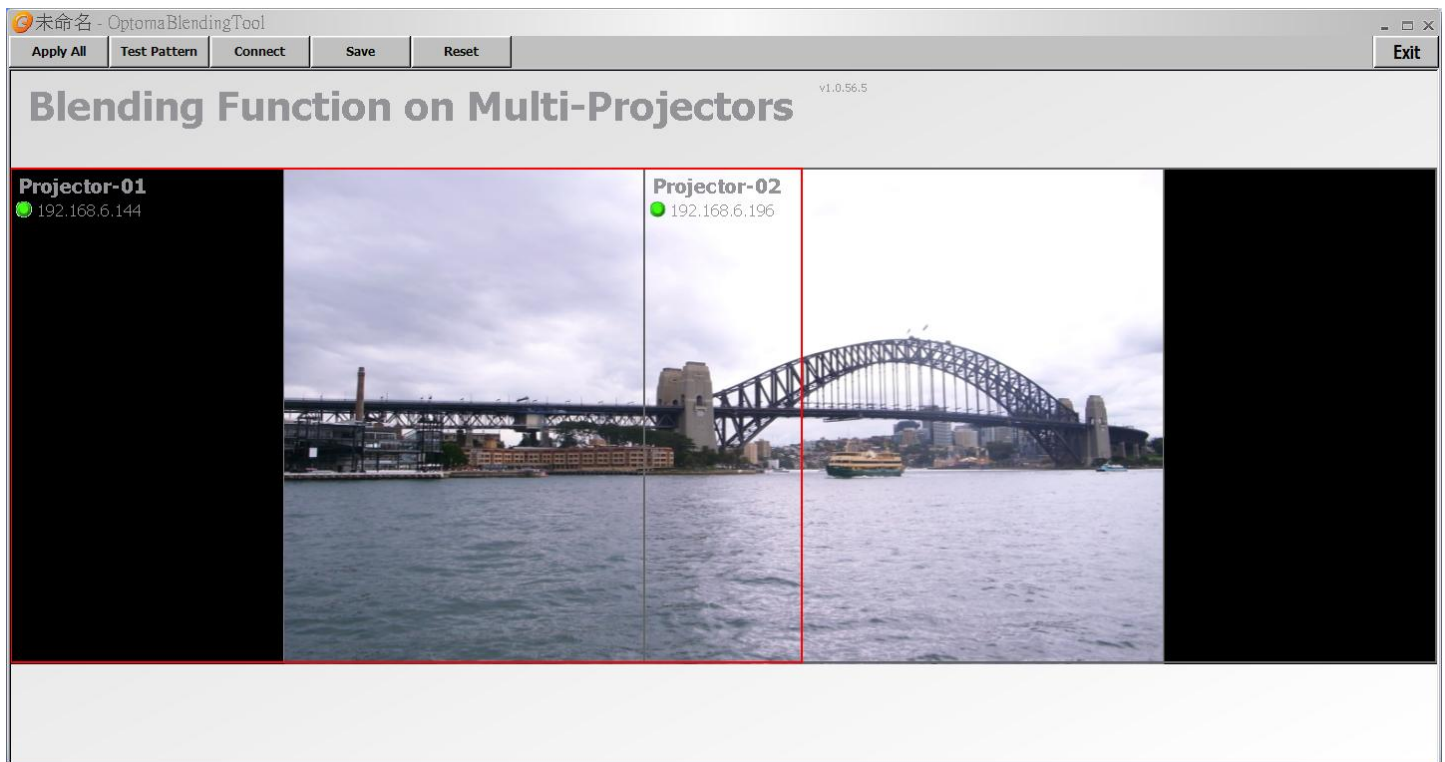
- Click OK to connect all projectors.



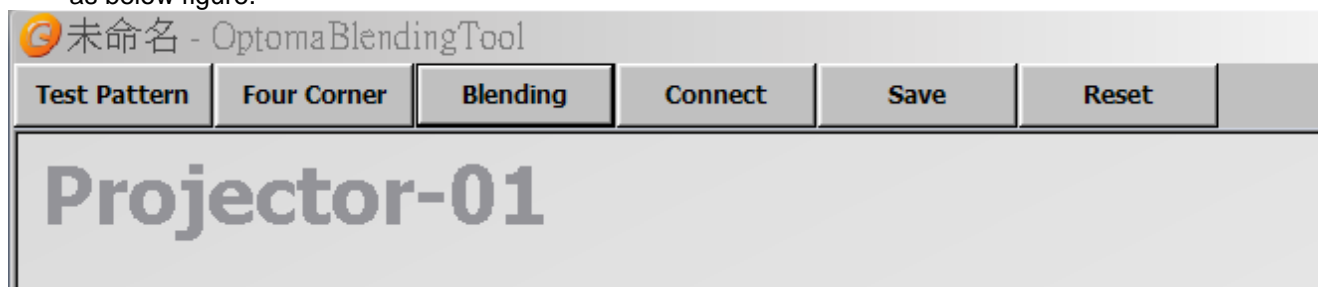
- The green light will indicate connecting status of projectors.
- Press "Apply All" and blending settings are completed. Press "Save" to save the settings.
- "Apply All " will update automatically all settings(crop/ blending) in each projectors
- "Test Pattern "will open the test pattern.
- "Connect" connect to projector with IP settings
- "Save" will save fine tune setting for all settings
- "Reset" will reset the system



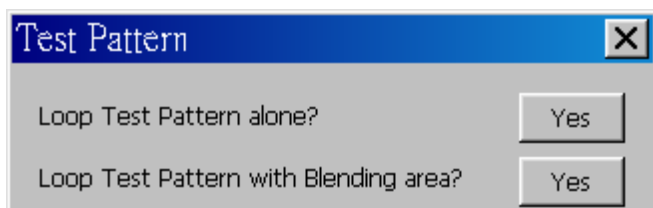
- Advance setting of Blending Function on Multi-Projectors ,double click one projector area as below figure to modify more setting.



- Advance function: After double clicking on the projector area, main menu will show the page to do specific settings as below figure.



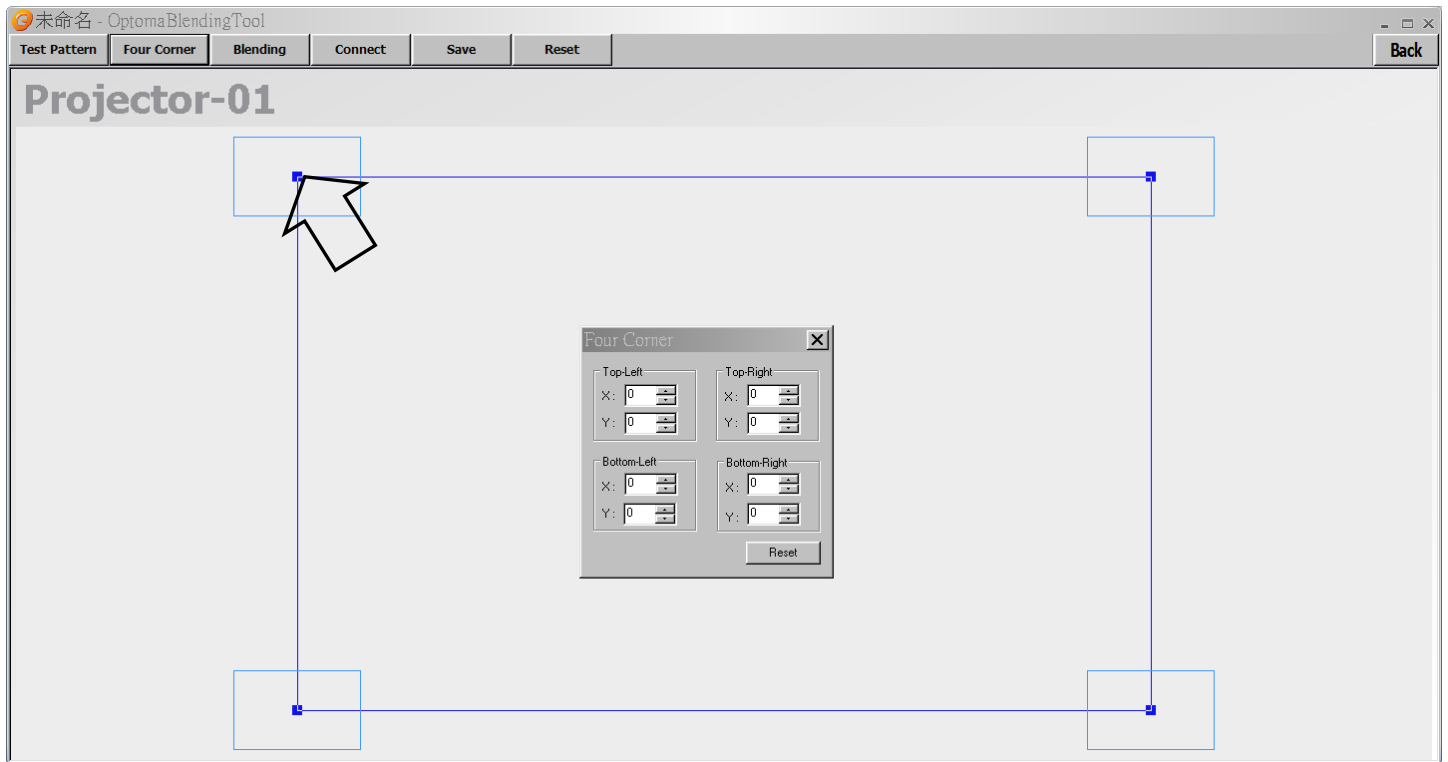
- Test Pattern: To call out pattern and user can open Four Corner (EE solution) to fine tune alignment of grid into white.



Loop : Off/White line (none for source found)/Green/Magenta

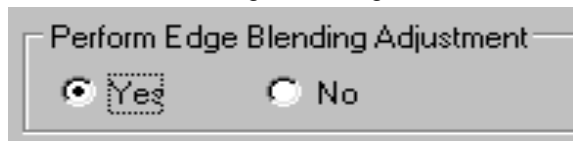
Loop : Off/White line (none for source found)/Green/Magenta
/with Blending at same time

- Four Corner: There are two methods to adjust corner of output image of projector
 - move point of corner
 - click up/down each item or key-in value in one item and press enter.
 - The adjustable range will be within the range of -5 ~ +5% of output resolution.

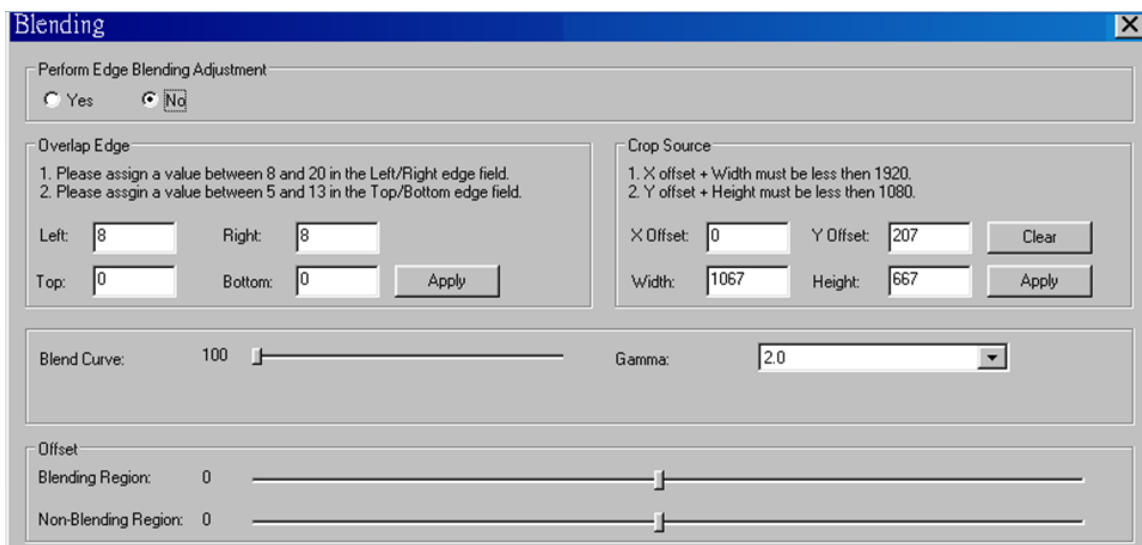


➤ Blending: adjust blending parameter.

- Perform Edge Blending Adjustment: To adjust the edge blending parameters
Yes : Enable the edge blending function
No : Disable the edge blending function



- Overlap Edge: Re-adjust the overlap blocks again
- Crop Source: Based on setting of Blending Function on Multui-Projectors, below values will be adjusted automatically.
Clear : Reset the parameter
Apply : Disable the edge blending function
- Blending Curve: Fine tune gamma curve at overlap area (Not suggested)
- Gamma : 1.8 /2.0 (Default) /2.2
AP can call same Gamma curve at overlap area and each projector.
- Offset: Fine tune brightness level for blending area and non-blending area.



--- Geometry Function on Single Projector

Step1: The user can choose [Geometry Function on Single Projector] to set blending parameter for one projector.

Welcome to Optoma Blending Tool

Blending Function on Multi-Projectors

Geometry Function on Single Projector

Geometry Function on Single Projector

Open Other...

Cancel

Step2: to choose output resolution of projector. Ex: EX85x → XGA; EW86x → WXGA

Geometry Function on Single Projector

Output Resolution

☐ XGA (1024x768)

☒ WXGA (1280x800)

Network Address

Cancel

Next>

Step3: fill IP address of this projector.

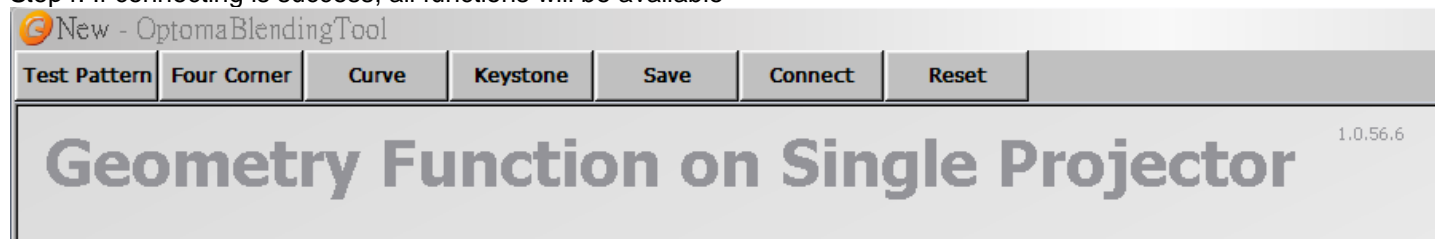
Geometry Function on Single Projector

IP Address:

Output Resolution

Network Address

Step4: If connecting is success, all functions will be available



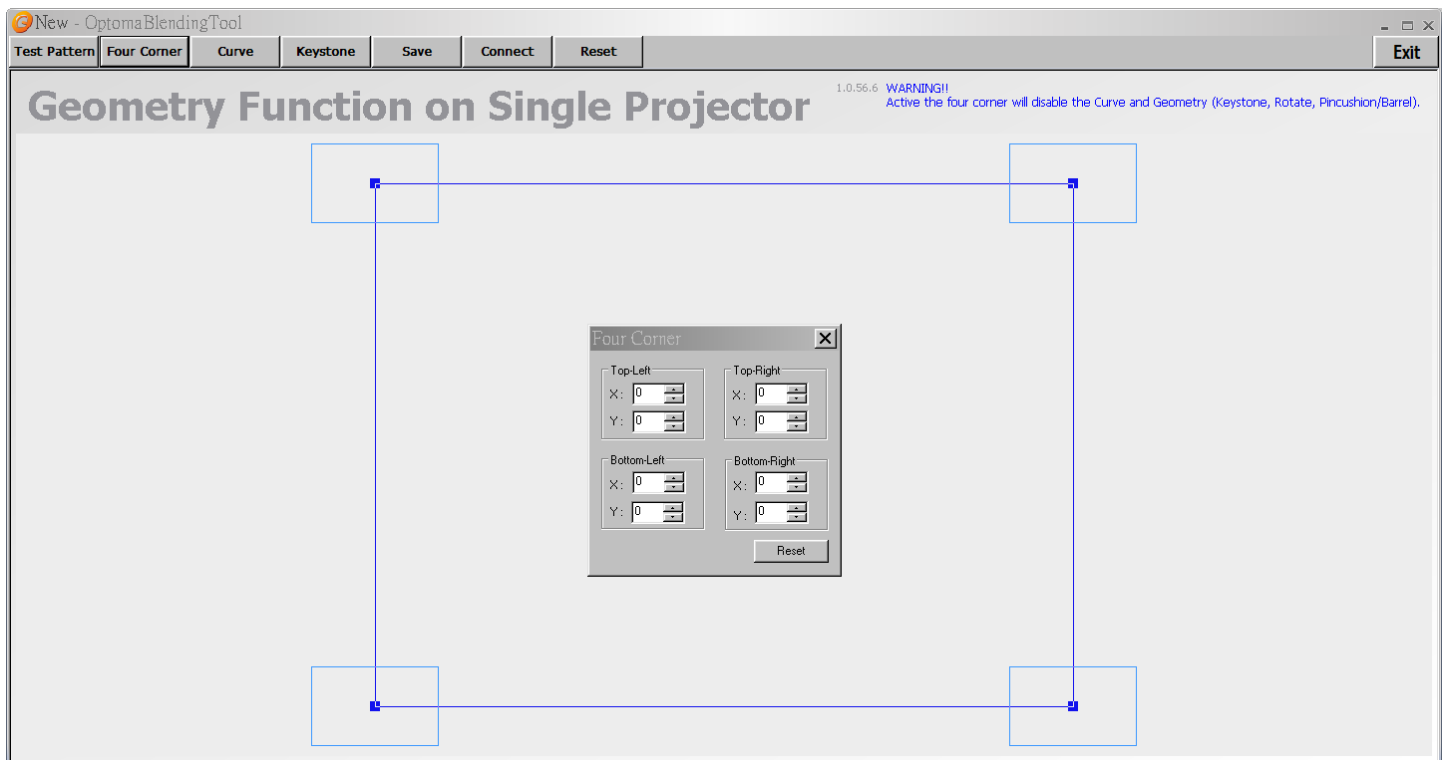
- If connecting is failure, please check IP address or PC mode setting in Geometry in OSD, and pressing button "connect" to connect to projector again.



- Advanced setting:
 - function conflict table

GEO Warp Function	Blending	4-Corner	Curved Surface (2x2)	Keystone	Pincushion and Barrel	Rotation
Blending		V	X	X	X	X
4-Corner	V		X	X	X	X
Curved Surface (2x2)	X	X		X	X	X
Keystone	X	X	X		V	X
Pincushion and Barrel	X	X	X	V		X
Rotation	X	X	X	X	X	

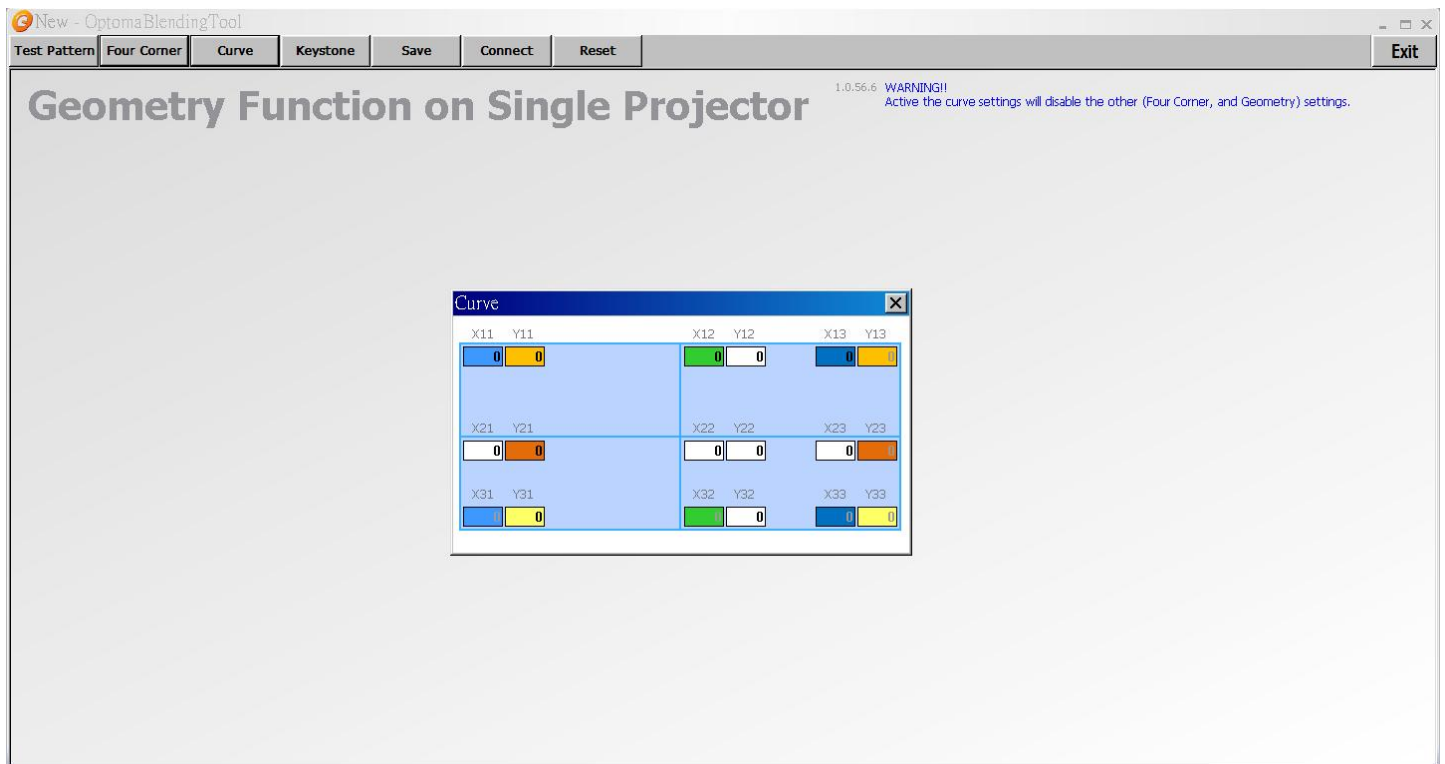
- Four Corner: Same as Advance setting of Blending Function on Multi-Projectors



- Curve: adjust curve surface of image. The adjustable range will be within the range of -50 ~ +50% of WXGA or -70 ~ +70% of XGA of output resolution. User need to key in a value in one item and press enter key to apply process.

User can not modify X31, X32, X33, Y13, Y23 and Y33 under below constrains.

- $X_{31} = X_{11}$: X movement at top and bottom of left edge identical
- $X_{32} = X_{12}$: X movement at center of top and bottom edge identical
- $X_{33} = X_{13}$: X movement at top and bottom of right edge identical
- $Y_{13} = Y_{11}$: Y movement at left and right of top edge identical
- $Y_{23} = Y_{21}$: Y movement at center of left and right edge identical
- $Y_{33} = Y_{31}$: Y movement at left and right of bottom edge identical



Keystone: adjust Horizontal and Vertical Keystone, Pincushion, Barrel and Rotation.

The adjustable range were listed below:

- Horizontal and Vertical : -40 ~ +40
- Pincushion and Barrel : -20 ~ +20
- Rotation : -90 ~ +90

