# Warping & Blending AP



# **Operation about AP**

This AP provides three major functions including Warp, Edge Blending and Black Level.

- If the AP is already installed, please remove previous version before installing the new one.
- If the projector was closed, please reopen the AP again to continue adjust.

# **New Multi-Function**

This function makes user able to operate a single projector.

You can enable this function in the menu  $[File] \rightarrow [New Multi-Function]$ .

File	Edit
	New Multi-Function
	Open
	Save
10	

If you want to connect another projector, please do  $\$  [File]  $\rightarrow$  [New Multi-

File	) Edit		
	New Multi-Function		
	Open		
	Save		
			General Warp Edge Blending Black Level
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Function ] again. You can use mouse to select a projector which you want to adjust.

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Projector Control							
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Projector Output Resolution		- Function S	Settings				
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Connect Setting							
Tip: Limit each interface card to one network configuration							
IP Address : 192 . 168 . 0 . 100 Connect							

# **Projector State**

- Icon that indicating disconnection:
- Icon that indicating connection:
- Icon that indicating sleep:
- Selected channel will be in a blue box:
- Press "Ctrl + Shift + Delete" on the keyboard to delete the selected channel

# General

File Edit		
Projector Control		
		General Warp Edge Blending Black Level
Projector Output Resolution		Function Settings
WXGA (1280×800)	WUXGA (1920x1200)	Reset All Reconfigure
	Ó	
Connect Setting	U	
Tip: Limit each interface card to one network configuration		
IP Address : 192 . 168 . 0 . 100 Connect		
100		

## **Projector Output Resolution**

• Please select the connected projector's native resolution.

# **Connect Setting**

• After selected resolution, then edit IP address and connect with projector.

## **Function Settings**

- "Reset All" button can reset all settings to default value including Warp, Edge Blending and Black Level. The button will enable after connected by New Multi-Function, then disable after user entry into Warp, Edge Blending or Black Level layer.
- "Reconfigure" button can apply saved settings from AP to projector. The button will enable if user open a saved file.

# Warp

Nove Pitch : pixel)	0.5	1.0	5.0	10.0	Seneral 50.0	Warp Ed. 100.0	Coordinate
							X: 0.0000 Y: 0.0000 Cursor
							Show Cursor Color : Blank Enable
							Test Pattern Test Pattern Color :
							Warp © Curve
Grid Number :	2x2	3x3	5	<5	9x9	17x17	Reset

# **Move Pitch**

- Current adjustment point move pixels once.
- Adjust the Move Pitch, use [+] and [-] on the key board or simply use mouse.
- Move Pitch default is 100 pixels.

# **Grid Number**

- Type of warping adjustment points.
- Use [Ctrl] and [+], [Ctrl] and [-] on the key board or simply use mouse

to increase/decrease the grid number, and to increase/decrease the cursor number at the same time.

• Grid Number default is 3x3 mode.

# Coordinate

• Show the current adjustment point coordinate.

# Cursor

- Show the adjustment points on projection screen.
- Click on the 【Color】 can change the cursor color.

# Blank

• Projector output black pattern.

# Test Pattern

• Show the grid pattern on projection screen.

# Warp

- Warping adjustment type.
- The function hide if projector support new warping algorithm.

# Select Warp Cursor

- One selected point can adjust warping.
- Use 【W】, 【A】, 【S】, 【D】 on the key board or simply use mouse. The selected cursor will be change into blue color.

# **Move Warp Cursor**

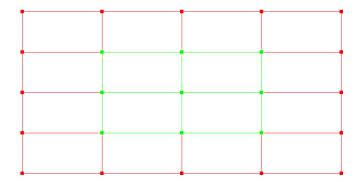
- The selected point can move coordinate to do warping adjustment.
- Move cursor, use  $[\uparrow, \downarrow, \leftarrow, \rightarrow]$  on the key board.

## Reset

• Click on the button will reset Warp settings.

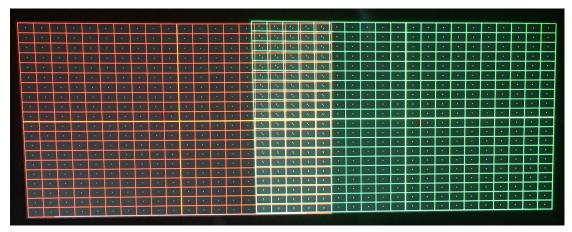
# Adjustment procedure:

- Choosing less grid number then increases the grid number step by step, so we usually use 2x2 to setup four corners at first.
- After using more grid number then choose less grid number will lose the early detail settings.
- Adjust the outer cursors as the red ones shown below, and then adjust the inner cursors as the green ones shown below.
- After adjusted inner cursors then adjusted outer cursors will lose the inner cursors settings.
- Using less grid number adjustment is easier to get homogeneous deformation.

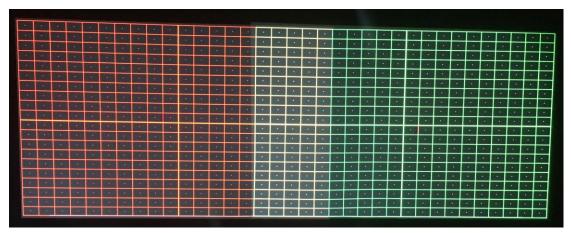


# Test Pattern

- Test Pattern can help user to align the overlap area.
- Use test pattern to speed up the warping process as shown below.



Before adjustment



Adjustment finished

# Edge Blending

File Edit Projector Co	
Left	General     Warp     Edge Blending     Black Level       p     Enable     Start : <ul> <li>Enable Marker</li> <li>Start :</li> <li>Width :         <li>100 <ul> <li>Enable Right</li> <li>Right</li> </ul>      Gamma</li></li></ul>
Enable Start : 0 A Width : 100 A	Enable Start : 1820 Width : 100
Enable Marker Start :	Enable Marker Start :  End :
	ttom Enable Start : 1100  Enable Marker Start :  Width : 100  Enable Marker End :  Reset
100	

Тор

- Start indicate the top vertical position of top blending area, default value is 0.
- Width indicate the range of top blending area, default value is 100 pixels.
- Marker Start indicate the top line of top blending area, default color is black.
- Marker End indicate the bottom line of top blending area, default color is black.
- Both Marker Start line and Marker End line can change color by mouse click.
- After edit Start or Width, it must press "Enter" key to apply.

#### Bottom

- Start indicate the top vertical position of bottom blending area, default value is Projector Output Resolution's height minus 100.
- Width indicate the range of bottom blending area, default value is 100 pixels.
- Marker Start indicate the top line of bottom blending area, default color is black.
- Marker End indicate the bottom line of bottom blending area, default color is black.
- Both Marker Start line and Marker End line can change color by mouse click.
- After edit Start or Width, it must press "Enter" key to apply.

#### Left

- Start indicate the left horizontal position of left blending area, default value is 0.
- Width indicate the range of left blending area, default value is 100 pixels.
- Marker Start indicate the left line of left blending area, default color is black.
- Marker End indicate the right line of left blending area, default color is black.
- Both Marker Start line and Marker End line can change color by mouse click.
- After edit Start or Width, it must press "Enter" key to apply.

#### Right

- Start indicate the left horizontal position of right blending area, default value is Projector Output Resolution's width minus 100.
- Width indicate the range of right blending area, default value is 100 pixels.
- Marker Start indicate the left line of right blending area, default color is black.
- Marker End indicate the right line of right blending area, default color is black.
- Both Marker Start line and Marker End line can change color by mouse click.
- After edit Start or Width, it must press "Enter" key to apply.

## Gamma

- Gamma value can control the gamma curve of the blending area.
- Default of Gamma is 2.2.
- After edit Gamma value, it must press "Enter" key to apply.

## Reset

• Click on the button will reset Edge Blending settings.

## Adjustment procedure

- Setting the blending width, the start position let the edge blending marker superimposed on each other.
- Whether the blending area matches another or not also depends on the result of warping adjustment.
- Setting the same blending gamma value to the blending area of adjacent projectors.

# Enable Marker

- Marker can help user to align the overlap area.
- Set the start position and the corresponding width to speed up the blending process as shown below.



Before adjustment



Adjustment finished

# Blending Adjustment for Multi Projectors

- Please check projector's native resolution and input signal segment pixels.
- Edge blending adjust start position and correction width to match input signal segmentation.
- Projector adjust ZOOM size and LENS offset for blending area overlap.
- Warping fine-tune with Test Pattern function.
- Enable Edge Blending and set same Gamma value for each projector.

# Black Level

If projector output dark content, the blending area will visible. Black Level can patch palettes for projection screen homogeneous.



Before Black Level adjustment



After Black Level adjustment

Projector Control						
	General	Warp Edge Blen	ding Bla	ck Leve	1	
P		•	Black level			
			Enable		2.2	
			Palette	Red	Green	Blu
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			2	0	0	0
			4	0	0	0
			5	0	0	0
			•	III		4
				Overwrite	e R	eset
100						

## Canvas

- Black level only support rectangular shape, there are four points to determine the rectangular shape.
- Default color of upper left point is red.
- Default color of upper right point is green.
- Default color of lower left point is cyan.
- Default color of lower right point is yellow.
- The select point will turn to hollow.
- Select the control point, use 【W】, 【A】, 【S】, 【D】 on the key board or simply use mouse.
- Use mouse to drag and put the control point to the desired position.
- Use  $[\uparrow, \downarrow, \leftarrow, \rightarrow]$  on the key board to process fine tuning.

## Transparent

• Default transparent is 2.2.

## Palette

- Black Level support five palettes, default color is black.
- Click on a row of palette table will show palette dialogue, the dialogue can pick the palette color.
- The selected palette will turn to light gray background.

#### Overwrite

• Click on the button can paint the selected palette on canvas rectangular area.

#### Reset

• Click on the button will reset Black Level settings.

Colo	or	×
Basic colors:		
Custom colors:		
Define Custom Colors >>	Hue:     160     Red:       Sat:     0     Green:       Color Solid     Lum:     0	0
OK Cancel Help	Add to Custom Colors	

Palette Dialogue

# Save/Open

This function makes user able to save the current settings for each projector and open the setting for them after power on next time.

User can enable this function in the menu  $\$  [File]  $\rightarrow$  [Open] / [Save] .

New Multi-	Function							
Open								
Save								
					General	/arp Edg	je Blending Blac	k Level
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Edit New Multi- Open Save							e Blending Blac	k Level
Edit New Multi- Open Save we Pitch :	0.5	1.0	5.0	10.0	General W 50.0	Varp Edg 100.0	e Blending Blac	k Level
Edit New Multi- Open Save ve Pitch :		1.0	5.0			100.0	Coordinate	k Level
Edit New Multi- Dpen Save ve Pitch :	0.5	1.0	5.0				Coordinate X: 0.0000	k Level
Edit New Multi- Dpen Save ve Pitch :	0.5	1.0	5.0			100.0	Coordinate	k Level
Edit New Multi- Dpen Gave ve Pitch :	0.5	1.0	5.0			100.0	Coordinate X: 0.0000 Y: 0.0000	k Level
Edit New Multi- Dpen Gave ve Pitch :	0.5	1.0 1	5.0			100.0	Coordinate X: 0.0000 Y: 0.0000 Cursor	
Edit New Multi- Dpen Gave ve Pitch :	0.5	1.0	5.0			100.0	Coordinate X: 0.0000 Y: 0.0000	k Level
Edit New Multi- Dpen Gave ve Pitch :	0.5	1.0	5.0			100.0	Coordinate X: 0.0000 Y: 0.0000 Cursor V Show Cursor	
Edit New Multi- Dpen Gave ve Pitch :	0.5	1.0 1	5.0			100.0	Coordinate X: 0.0000 Y: 0.0000 Cursor V Show Cursor Blank	
Edit New Multi- Dpen Gave ve Pitch :	0.5	1.0	5.0			100.0	Coordinate X: 0.0000 Y: 0.0000 Cursor V Show Cursor	
Edit New Multi- Dpen Gave ve Pitch :	0.5	1.0	5.0			100.0	Coordinate X : 0.0000 Y : 0.0000 Cursor ☑ Show Cursor Blank	
Edit New Multi- Dpen Gave ve Pitch :	0.5	1.0 1	5.0			100.0	Coordinate X : 0.0000 Y : 0.0000 Cursor Ø Show Cursor Blank Enable Test Pattern	
Edit New Multi- Dpen Gave ve Pitch :	0.5	1.0	5.0			100.0	Coordinate X : 0.0000 Y : 0.0000 Cursor ☑ Show Cursor Blank	
Edit New Multi- Dpen Gave ve Pitch :	0.5	1.0	5.0			100.0	Coordinate X: 0.0000 Y: 0.0000 Cursor Show Cursor Blank Enable Test Pattern Enable	
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Edit New Multi- Dpen Save ve Pitch :	0.5	1.0	5.0			100.0	Coordinate X: 0.0000 Y: 0.0000 Cursor Show Cursor Blank Enable Test Pattern Enable	
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Edit New Multi- Open Save ve Pitch :	0.5	1.0	5.0			100.0	Coordinate X: 0.0000 Y: 0.0000 Cursor Show Cursor Blank Enable Test Pattern Enable	
Edit New Multi- Open Save we Pitch :	0.5	·		10.0	50.0	100.0	Coordinate X: 0.0000 Y: 0.0000 Cursor Show Cursor Blank Enable Test Pattern Enable	
Edit New Multi- Open Save vve Pitch : xel)	0.5 	1.0	5x	5	50.0 , 9x9	100.0	Coordinate X: 0.0000 Y: 0.0000 Cursor Show Cursor Blank Enable Test Pattern Enable	
Edit New Multi- Open Save we Pitch :	0.5	3х3		5	50.0	100.0	Coordinate X: 0.0000 Y: 0.0000 Cursor Show Cursor Blank Enable Test Pattern Enable	
Edit New Multi- Open Save vve Pitch : xel)	0.5 	·	5x	5	50.0 , 9x9	100.0	Coordinate X: 0.0000 Y: 0.0000 Cursor Show Cursor Blank Enable Test Pattern Enable	Color :
Edit New Multi- Open Save vve Pitch : xel)	0.5 	3х3	5x	5	50.0 , 9x9	100.0	Coordinate X: 0.0000 Y: 0.0000 Cursor Show Cursor Blank Enable Test Pattern Enable	Color :
Edit New Multi- Open Save ve Pitch : xel)	0.5 	3х3	5x	5	50.0 , 9x9	100.0	Coordinate X: 0.0000 Y: 0.0000 Cursor Show Cursor Blank Enable Test Pattern Enable	Color :
Edit New Multi- Open Save ve Pitch : xel)	0.5 	3х3	5x	5	50.0 , 9x9	100.0	Coordinate X: 0.0000 Y: 0.0000 Cursor Show Cursor Blank Enable Test Pattern Enable	Color :

User can save all the settings after adjustment by clicking on 【Save】.

File	Edit						
	New Multi-Function						
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		(1920x1200)	Re	set All	Reconfigure		
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	Connect Setting						
	Tip: Limit each interface card to one network configuration						
	IP Address : 192 . 168 . 0 . 100 Connect						
	100						

User can apply the previous settings by click on 【Open】.

- Edit IP address and connect with projector.
- Click on 【Reconfigure】 to apply the previous settings.