RICOH

RICOH PJ KU12000/LU8000

Warping and Blending Tool
User's Manual

Before using the Warping and Blending Tool

To ensure correct usage, be sure to read this user's manual before using this software.

The Warping and Blending Tool is software that can make stack projections with the "Geometric correction" feature and tiling projections with the "Edge Blending" feature on the PJ KU12000 or LU8000.
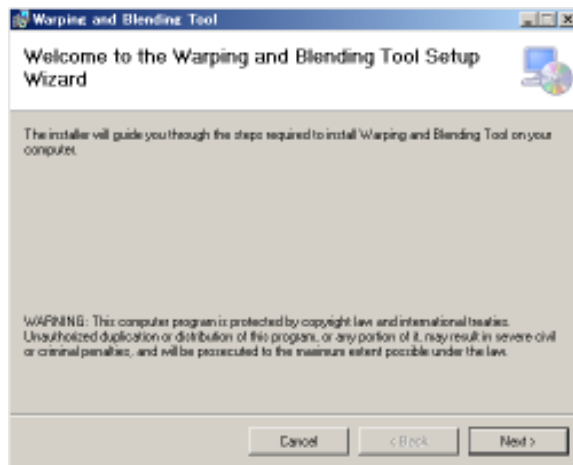
<System requirements>

- Supported OS - Windows 7 (64-bit, 32-bit)
- Processor – Intel Core2 Duo 2.6GHz or greater
- Memory - 2GB or greater
- Hard disk – 1GB or greater
- Firmware - V01.61, A00.51, G01.41 for RICOH PJ KU12000 (If the firmware version is old, please contact your service representative.)
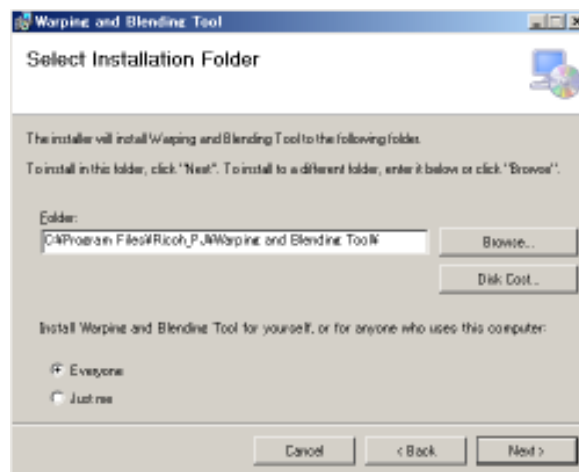
<Note>

- This software does not support Windows 8/8.1 or Windows 10.
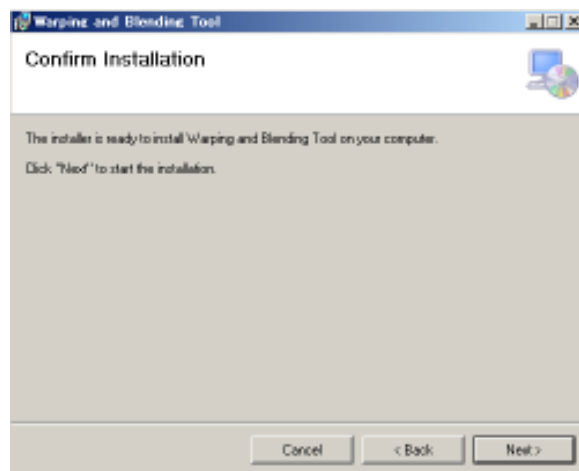
1. Install the Warping and Blending Tool

(i). Download the Warping and Blending Tool from our website in advance.

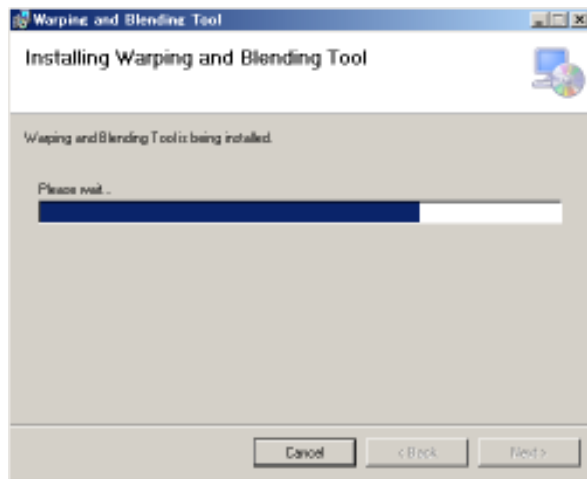(ii). Double-click [Setup Warping and Blending Tool.msi] and click [Next].
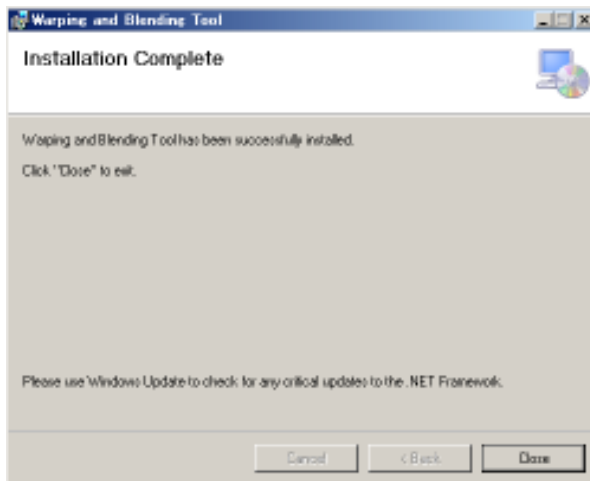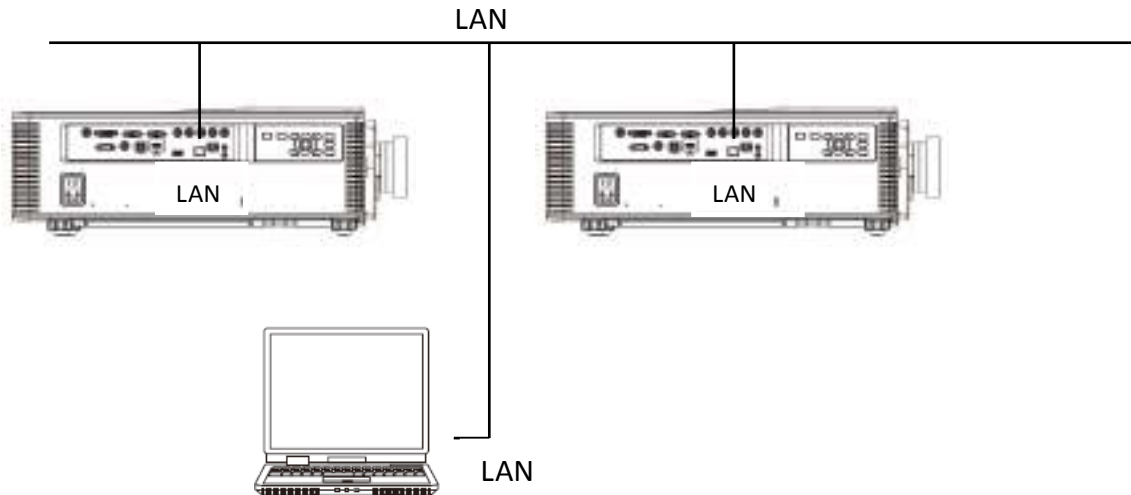

(iii). Click [Next].

(iv). Click [Next].

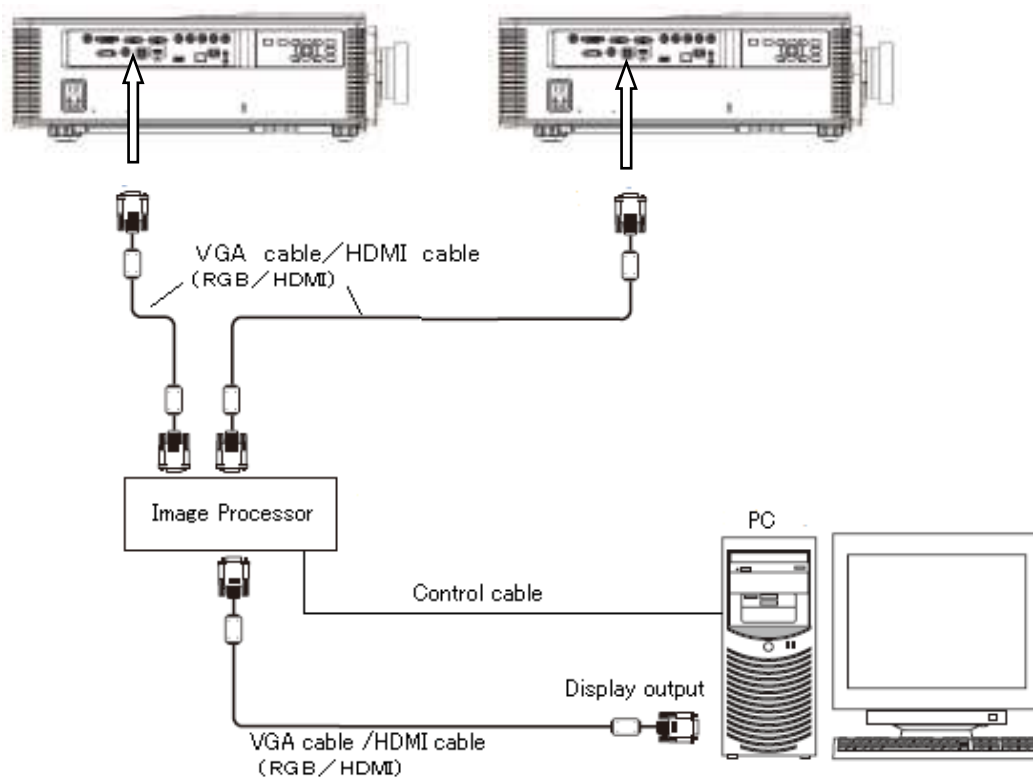**(v).** Click [Close].

2. Connect the projectors to a PC

(i). Connection diagram

<Notes>
- Connect two of the same projector models
- Configure the projectors to use the same resolution and light source settings
- Confirm that both projectors are connected to the same network
- Use Cat5 or higher cables
- Enable a RS232 connection with a crossover cable

(ii). Connection for image projection

<Notes>

- DVI-D, BNC, and Video cables can also be used
- It is necessary to output the Edge Blending image through an image processor

3. Configuring the Warping and Blending Tool

This software provides three major functions: Warp, Edge Blending, and Black Level. If the software cannot connect to the projector, please continue adjustments after reconnecting.
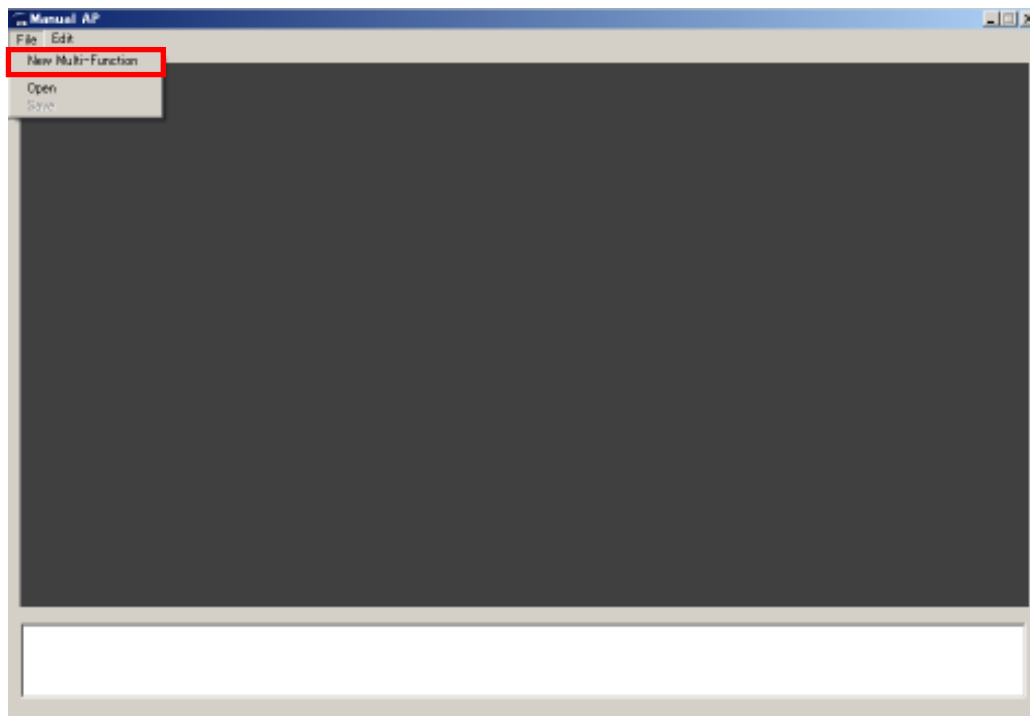
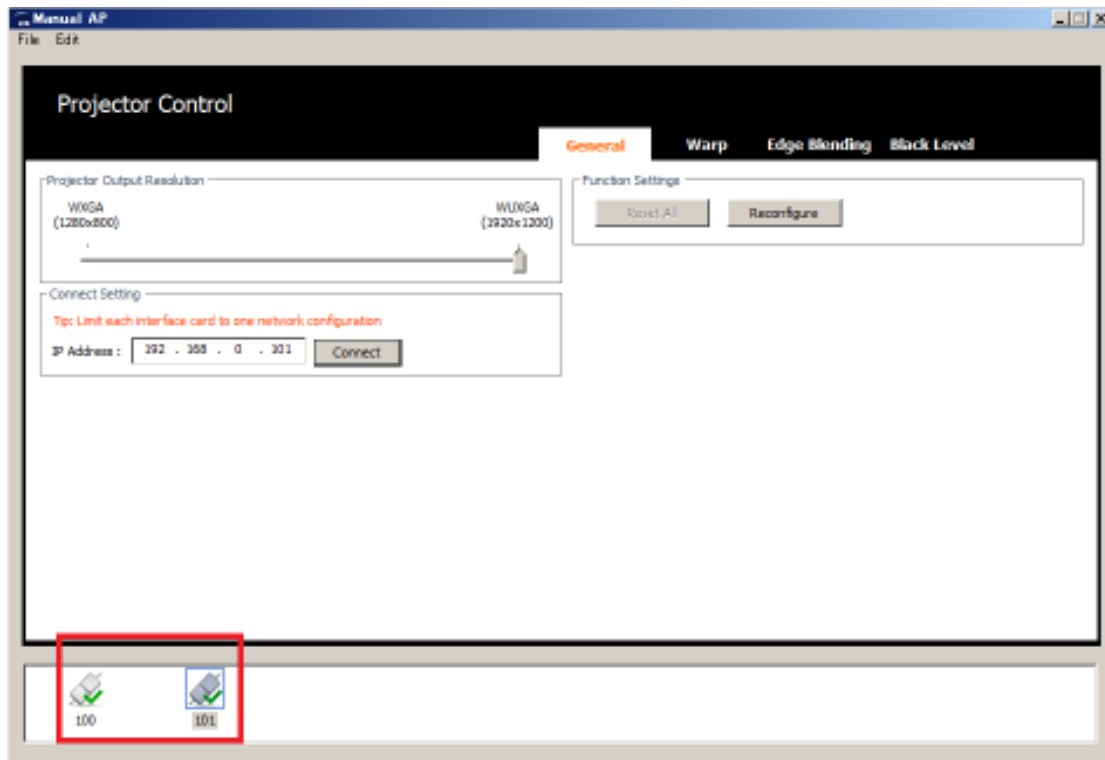### (i). Configuring the Warping and Blending Tool
For Windows 7
Activate the Warping and Blending Tool from [All programs] in the start menu.

(ii). New Multi-Function
This function is for registering controllable projectors with the software, one by one. Please select this function from the menu [File] > [New Multi-Function].

You can check the connection status between a PC and the projectors on the network in the lower left portion of the screen. (The following screenshot shows that two projectors are connected to the network.)

<Indication icon>

- Disconnected:

- Connected:

- In sleep mode:

- Selected channel (Will be displayed in the blue box):

* Press [Ctrl+Shift+Delete] on the keyboard to delete the selected channel.

(a). General

1) Projector Output Resolution

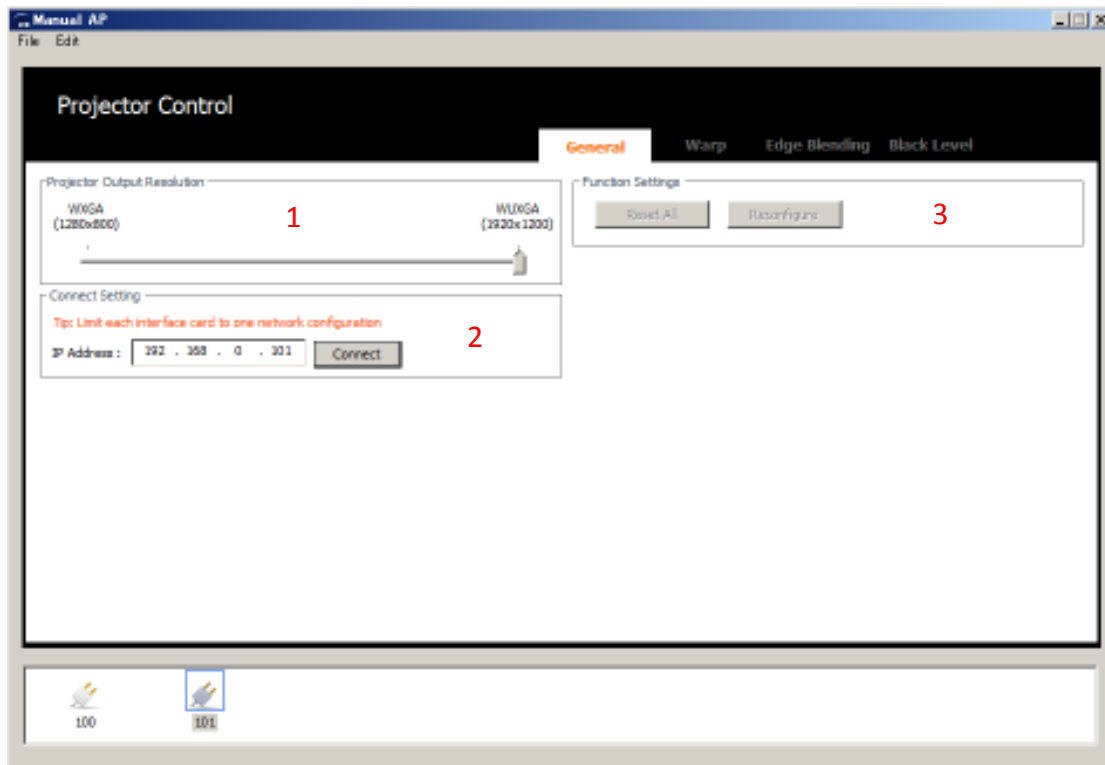　　Change the output resolution. (Please select an output resolution that meets the projector specifications.)

2) Connect Setting

　　Edit the IP address and click [Connect] to connect to a projector.

3) Function Settings

　　Click [Reset All] to apply the default settings to the projectors.
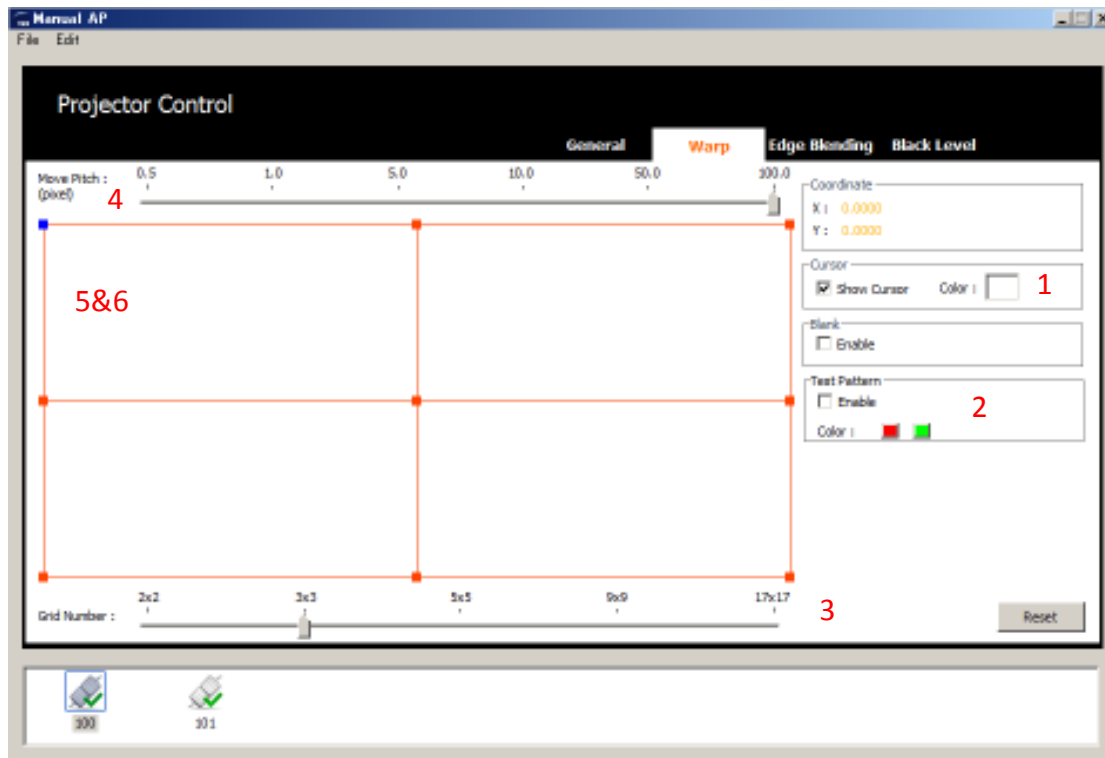
　　Click [Reconfigure] to apply the current software settings to the projectors.

<Notes>
● 　Check if the output resolution meets the projector specifications.
● 　When using the stacking and edge blending functions, please set the positioning of the projectors while adjusting the lens shift and zoom functions. Then, use this software to finish the adjustments.

(b). Warp

1) Cursor

    Right-click on [Color] to change the cursor color.

2) Warp

    Select [Enable] to display a test pattern* that can be displayed in either red or green.

3) Grid Number

    Use [Ctrl] and [+], [Ctrl] and [-] on the keyboard or use the mouse to increase/decrease the grid number and to increase/decrease the cursor number at the same time.

4) Move Pitch

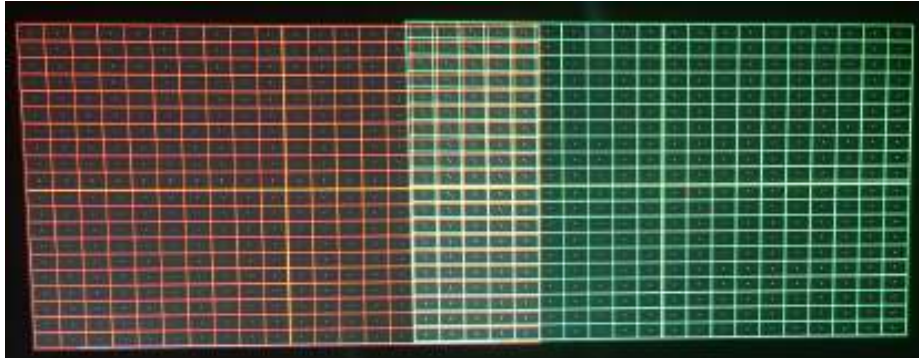   Use [+] and [-] on the keyboard or use the mouse.

5) Select Cursor

    Use [W], [A], [S], [D] on the keyboard or use the mouse. The selected cursor will be change to blue.

6) Move cursor

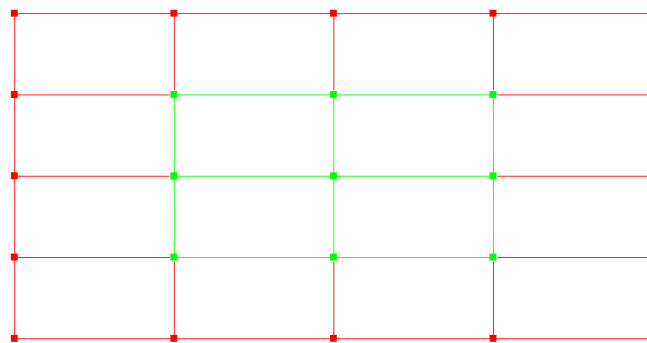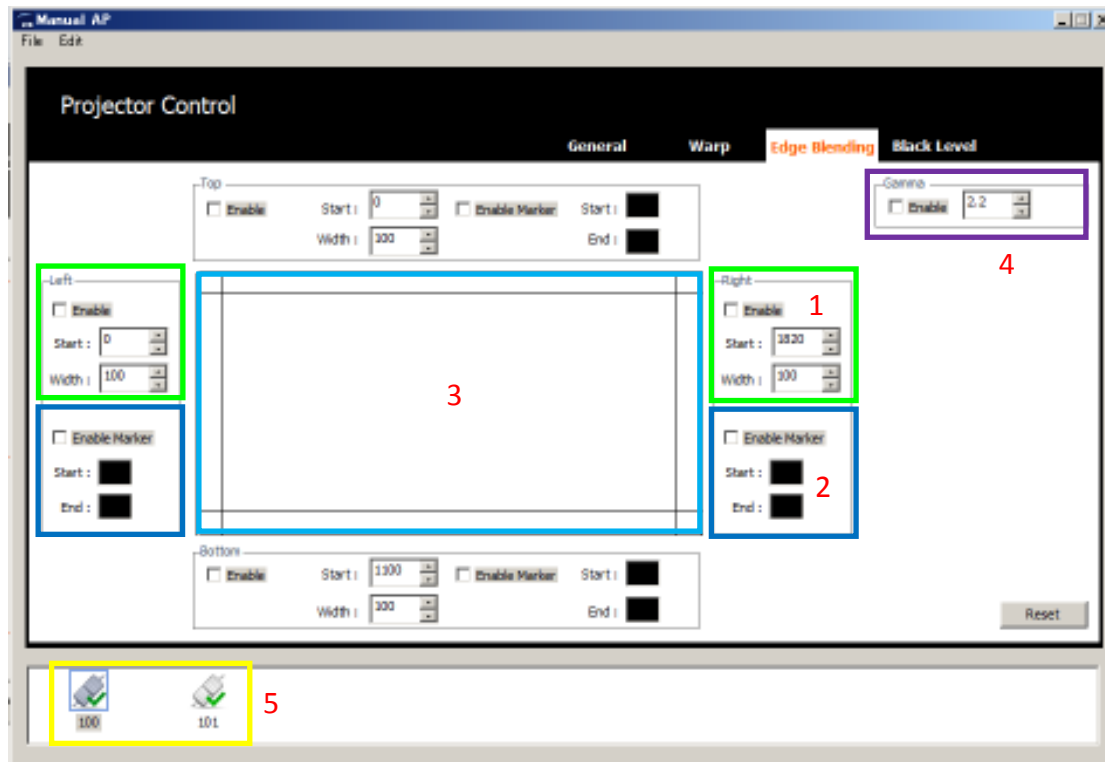   Use [↑], [↓], [←], [→] on the keyboard.

* Test pattern

Before adjustment

Adjustment finished

<Notes>

● Start with a small grid number (2x2 for example) and gradually increase it to ensure that the proper size is achieved.

● Earlier settings will be lost if a lesser grid number is chosen after a larger grid number.

● Adjust the outer cursors like the red ones shown below and then adjust the inner cursors like the green ones shown below.

● The inner cursor settings will be lost if you adjust the outer cursors after adjusting the inner cursors.

● It is easier to achieve homogeneous deformation by using a lesser grid number.

(c). Edge Blending

1) Right/Left – Start, Width, Enable (Seen in the green boxes above.)

    Press [▲] or [▼] to set the start position and the corresponding width of the blending area.

    If you select [Enable], each edge will darken to become seamless.

2) Right/Left – Start, End, Enable Marker (Seen in the blue boxes above.)

    If you right-click on [Start] or [End], you will see "Red/Green/Blue". After selecting a color, you will see the marker for the Start Line or End Line in the blending area.

    Select [Enable Marker] to always display the Start Line and End Line.

3) Blending area (Seen in the cyan box above.)

4) Gamma (Seen in the purples box above.)

    Input the gamma value to control the gamma curve in the blending area.
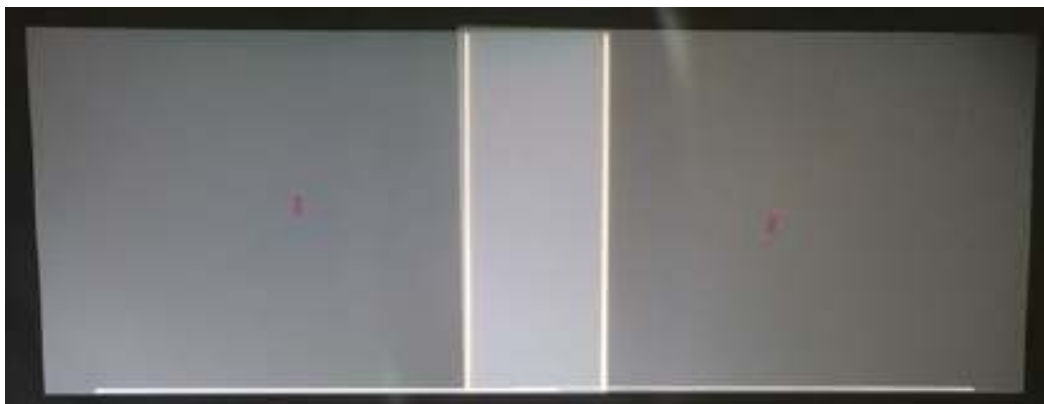
5) Channel status

    Select a channel to adjust the setting for each projector.

<Notes>

● Confirm that all projectors are using the same settings, such as power mode, display mode, etc..

● Set the same blending gamma value as the blending area of the adjacent projector.

● Whether the blending area matches another also depends on the results of the warping adjustments.
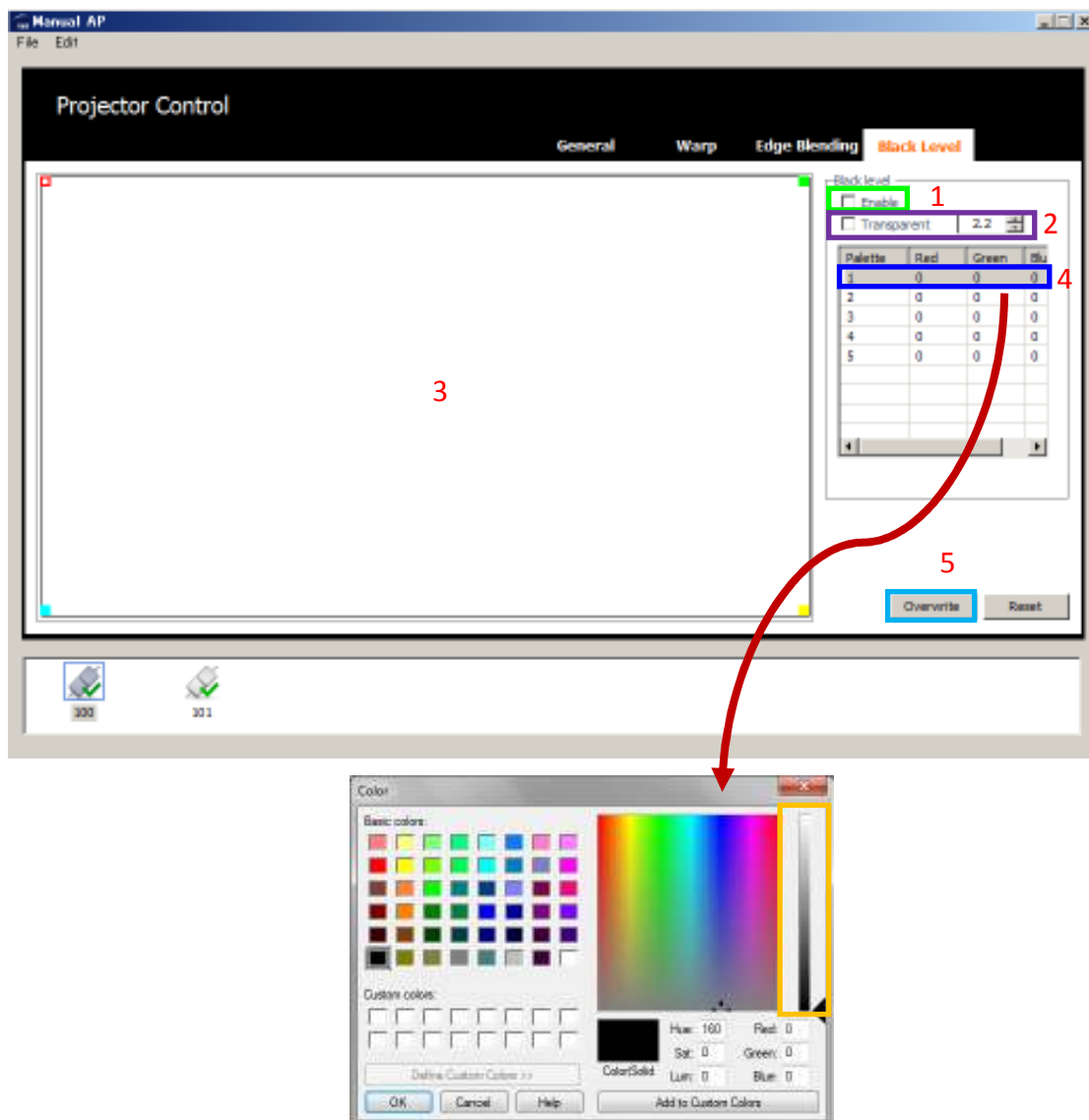
● Overlap the two markers as shown below.

Before adjustment

Adjustment finished

(d). Black Level

1) Enable

    Select [Enable] to adjust the black level.

2) Transparent

Press [▲] or [▼] to set the transparency.

3) Control point

    Use [W], [A], [S], [D] on the keyboard or use the mouse. Use the mouse to drag and set the control point in the desired position. Use [↑], [↓], [←], [→] on the keyboard to fine tune.

4) Color setting of the selected area

    If you click on the first row, the color palette will be displayed. Adjust the black and white gradation bar. (Seen in the orange box above.)
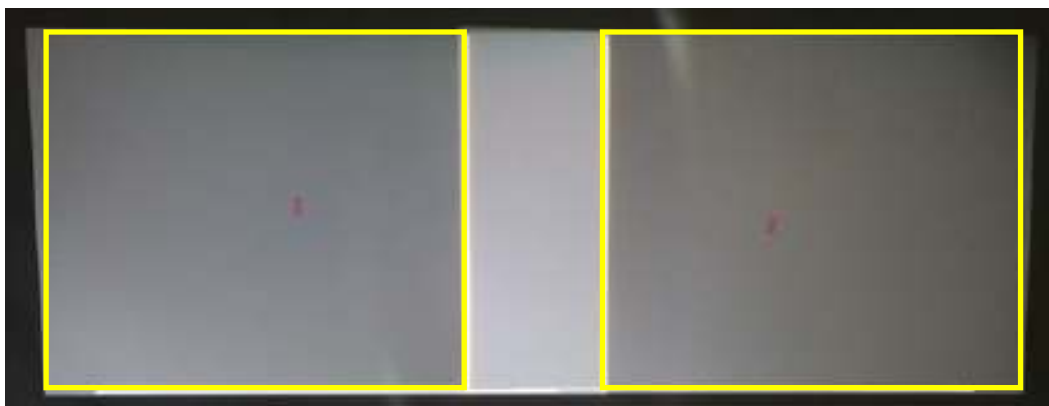
5) Overwrite

Apply the settings.

<Notes>
- Make adjustments while in a dark room.
- Project an all-black test pattern.
- Set per the blending area for each projector*.
- Adjust the black level so that it has the same brightness as the blending area.

* Black level setting area (Seen in the yellow box below.)

(e).   Save/Open

This function allows for saving the current settings for each projector and opens the settings for them next time. Click [Open] or [Save] under [File].