Warp & Blending

ADVANCED SCREEN MANAGER

Owner's Manual

Caution for using this software

When installing this software on a computer, make sure to read carefully [License Agreement] on the installation screen. We assume no responsibility for any computer or system troubles, data lost, data corruption or malfunction of equipments caused by the software or mishandling. We highly recommend to store the important data in the recording medium to another disc.

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Trademarks

Introduction

Advanced & Screen Manager is the image editing software to project images on the spherical or curved screens by installing Warp & Blending Board on the projector. By editing images with this software, you can project images on the spherical or curved screen with minimum distortion. When using several projectors to project one image on a multiscreen, the Blending function adjust image levels of overlapped parts. These advanced functions enable you to use projected images more effectively at various events or visual presentation.

Projecting on a
horizontally curved screen
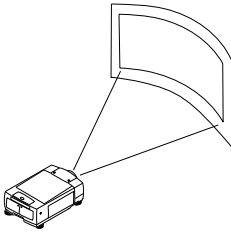
Projecting on a
vertically curved screen
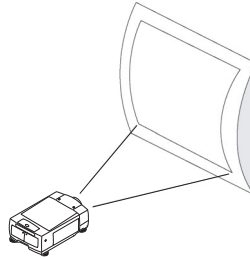
Projecting on a
spherical screen
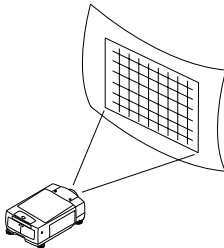
Projecting on a
multiscreen
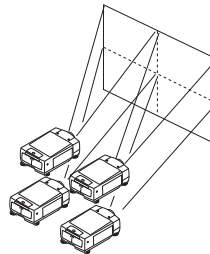
Projecting image
figures

English

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1. Operating Configuration of the Software

This software operate under these environment.

Compatible OS	Windows 98SE / Me / 2000 / XP
Main memory of the PC	RAM 256MByte or more
Recommended CPU of the PC	Pentium3 500MHz or more
Free hard disc of the PC (HDD)	40MByte or more
DIsplay setting of the PC	XGA (1024 x 768) or more
Interface of the PC	SERIAL(RS-232C)

2. Compatible Signal

This software is compatible with signals below.

Compatible signal	Signal format
Computer output	640X480(VGA), 800X600(SVGA) 1024X768(XGA), 1280X1024(SXGA) 1400X1050(SXGA+), 1600X1200 (UXGA) 1366X768(WXGA)
Digital image (Compatible with HDCP)	480P, 576P, 720P, 1080I/60Hz,1080I/50Hz

3. Preparation

■ Installation of the Warp & Blending Board

Install Warp & Blending Board to INPUT-4 of a projector or INPUT-5 of a slot. For details about installation, see the owner's manual supplied with the projector. Some projectors have already equipped with Warp & Blending Board at the time of purchase.

English

■ Connection

1. Connect a computer monitor output or an output terminal of a digital equipment to the digital DVI-D terminal of Warp & Blending Board.
2. Connect the SERIAL PORT IN terminal of Warp & Blending Board to the SERIAL terminal of the PC which is installed this software. When operating several projectors equipped with Warp & Blending Board, connect SERIAL PORT OUT terminal of Warp & Blending board to the SERIAL PORT IN terminal of the next projector's Warp and Blending Board. Connect the same way to another projector and link every projectors together.

DVI-D   SERIAL

To the SERIAL PORT IN of the next projector

WARP & BLENDING

DIGITAL (DVI-D)   SERIAL PORT IN   SERIAL PORT OUT

INPUT 4

INPUT 5

Installation of the Advanced Screen Manager
Mechanism and Function of the Warp& Blending
How to Start the Software
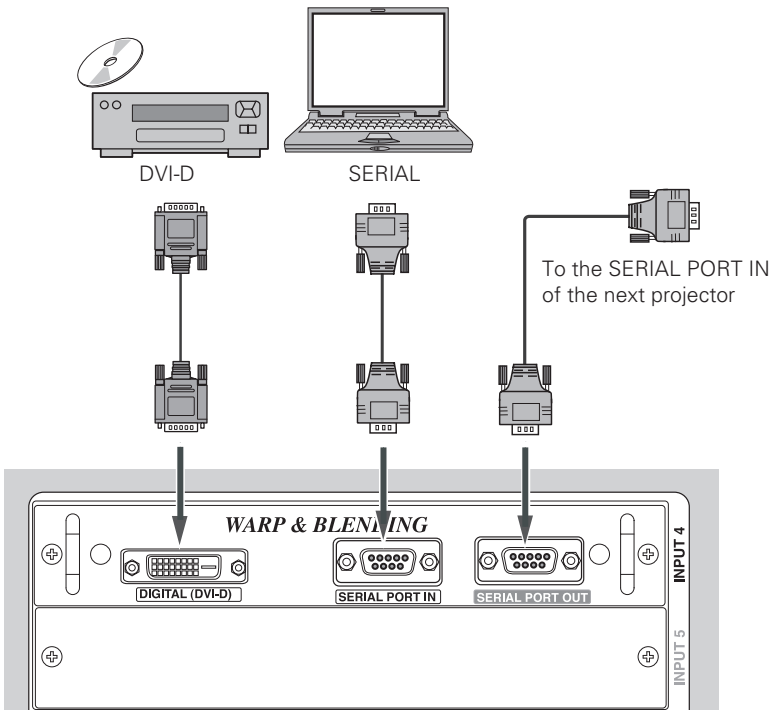
4. Installation of the Advanced Screen Manager

Install the program.
1. Insert the Program CD-ROM into a CD-ROM Drive of a PC.
2. Open My computer and double click CD-ROM Drive. Then open Tool folder and double click the set-up icon.
3. Select English for the installation and press the "OK" button.
4. Installation starts and License Agreement will appear. (CAUTION; READ THE LICENSE AGREEMENT CAREFULLY) If you agree, click "Yes".
5. Specify the folder to install the program.
6. After completing installation, Warp & Blender will be registered in the program start-up menu.
7. If you want to delete the program, operate from "Add and delete application" in the control panel.

5. Mechanism and Function of the Warp& Blending

The DIGITAL image signal which was input into DVI-D terminal (compatible with HDCP) of Warp & Blending Board is projected after editing for the spherical or curved screen.
Advanced Screen Manager edits images. The image data which was edited by Advanced Screen Manager is sent from SERIAL terminal of the pc to SERIAL PORT IN terminal of Warp & Blending Board, then Warp & Blending Board starts editing image based on the received data.
SERIAL PORT OUT on the Warp & Blending Board output the signal input from SERIAL PORT IN. When projecting Warp & Blending image with several projectors, connect SERIAL PORT OUT to the next projector.
You can give the identified codes to each projector to control all of them individually.

6. Start up Advanced Screen Manager

1. First, turn on a projector, then turn on a computer.
2. Select Warp & Blending input (INPUT-4 or INPUT-5) as an input source on the pro jector, then project an image.
3. Start Advanced Screen Manager from program start menu of the computer.

7. Operation Screen of Advanced Screen Manager and Functions of Each Part

After starting up Advanced Screen Manager, you will get the screen below. With using this screen, you can edit an image and project an edited image.

English

Operation screen of Advanced Screen Manager
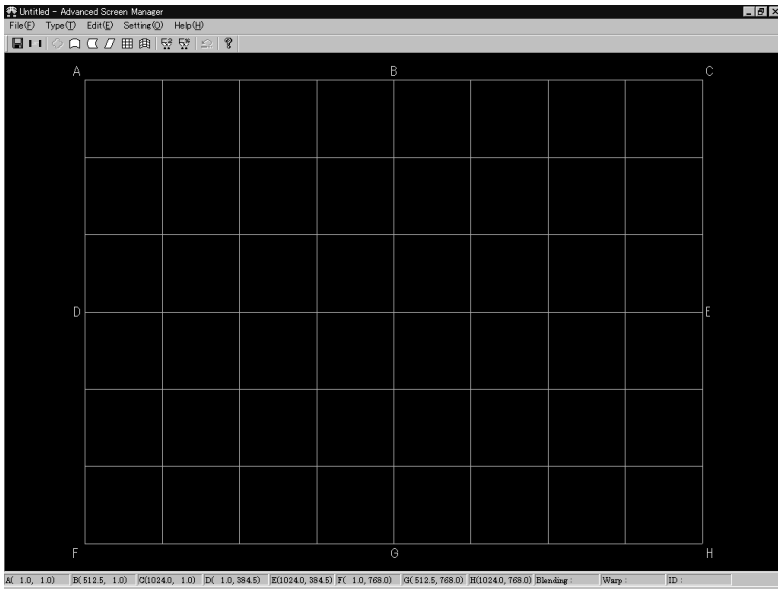
Toolbar icon

Part names and functions

File(F)   Save and administrate the edited data or execute the edited date.

Menu Item The No. is Toolbar icon No.	Function (Page)
New document (N)	Create a new file.
Open (O)	Open the stored file.
Save (S) ①	Save the edited data.
Save as a new file (A)	Save the edited data after giving a name.
Send (T) ②	Convert the adjusted data to binary data and send it to Warp&Blending board of the projector.
The end of application(X)	Terminate Advanced Screen Manager.

Type (T) Selecting a type of editing.

Menu Item The No. is Toolbar icon No.	Function (Page)
Spherical (S) ③	Edit to project on the spherical screen. (p17)
Horizontal curve (H) ④	Edit to project on the horizontally curved screen.(p19)
Vertical curve (Z) ⑤	Edit to project on the vertically curved screen. (p20)
Keystone (K) ⑥	Edit the keystone distortion. (p21)
Grid [New] (G) ⑦	Edit the grid. (p22)
Grid [transition] (I) ⑧	Correct the grid after editing any of "Spherical correction", "Horizontal curve" "Vertical curve", "Keystone". (p23)
Blending (B)	Select the blending Step. (p24)
Blending 2Step(T) ⑨	Set the 2Step Blending area and offset figure. (p25)
Blending 16Step(S) ⑩	Set the 16Step Blending area and offset figure. (p26)

English

Edit (E) Assisting the editing

Menu Item The No. is Toolbar icon No.	Function (Page)
Undo(U) ⑪	Undo the previous operation.
Reset(R)	Reset the editing to default setting.

Setting (O) Set the various configuration.

Menu Item The No. is Toolbar icon No.	Function (Page)
Resolution setting (R)	Set the input/output resolution. (p13)
Communication setting (C)	Set the communication configuration with the projector. (p13)
Test pattern(P)	Display the Test pattern. (p32)
Optical axis setting (L)	Set the Optical axis. (p14)
View angle setting (O)	Set the View angle (p15)
Center angle display (T)	Display the Center angle. (p30)
Blending (B)	Edit Blending. (p24)
Screen position adjustment(S)	Adjust the Screen position. (p30)
Warp ON/OFF (W)	Select ON, the edited image is displayed and select OFF, the image without adjustment is displayed. (p31)
Blending ON/OFF (E)	Select ON, the Blending image is displayed and select OFF, the image without adjustment is displayed. (p31)
Help(H) ⑫	Show the version information of the software.

✼ The figures in the circle correspond to toolbar icon numbers.

8. Operation procedure

Operation is made following STEP-1 ➜ STEP-2 ➜ STEP-3
See each section for detailed operation.

STEP-1   Configuration setting

First, set the operation configuration with the projector. If the operation configuration is not set properly, image can not be edited and projected properly.

■ Communication setting
Setting the communication between a PC and a projector (Warp and Blending Board).

■ Resolution setting
Set the editing software adjust to resolution of images and operation configuration of projectors.

■ Optical axis setting
Set the position of the lamp optical axis on the screen.

■ View angle setting
Set the view angle.

STEP-2 Image editing

Select the type of editing suitable for the shape of the screen, then edit the data.

■ Spherical correction
Edit the image to project on a spherical screen. (✻You cannot edit images to project on a perfect spherical object.)

■ Horizontal curve
Edit the image to project on a horizontally curved screen.

■ Vertical curve
Edit the image to project on a vertically curved screen.

■ Keystone
Edit the image to project diagonally on a flat screen

■ Grid correction [New]
Edit the image to project on a screen with irregular surfaces along with the shape of the screen.

■ Grid [transition]
    You can add partial editing to Spherical correction, Horizontal curve correction,
    Vertical curve correction and Keystone correction. After editing with this function,
    you cannot go back to the screen before this adjustment. If you go back, the
    screen also go back to before adjustment.

■ Blending
    When projecting one image with several projectors, on a multiscreen, adjust image
    levels of overlapped parts.

■ Confirmation of the edited data
    Project images concisely which are edited with any of Spherical correction,
    Horizontal curve correction, Vertical curve correction and Keystone correction to
    confirm the editing.

STEP-3 Image transmission

Project the image with using edited image data.

■ Send
    Send the edited date to Warp & Blending Board of the projector. The date will be
    loaded into Warp & Blending Board and based on the loaded image, Warp & blend-
    ing edits and projects the image input to the DVI terminal.
    To create editing data, repeat editing and sending to create the most suitable
    image for the shape of the screen.
    Save the data with selecting "Save as a new file (A)" on the edited screen. Every
    editings will be saved altogether. You need the edited date when you want to
    change the date again. When operating several projectors, you need to save the
    edited data for each projector.
    When sending the stored editing date, select "Open(O)" in the "Fle(F)" menu then
    send it.
    The date loaded into Warp & Blending Board stored there and remain even after
    turning off the projector.

    CAUTION : MAKE SURE TO SAVE THE DATA WHICH IS LOADED TO WARP &
    BLENDING BOARD TO EDIT. WITHOUT DATA SAVING, YOU CANNOT CORRECT
    OR CHANGE THE EDITED DATA LATER AND YOU NEED TO CREATE THE DATA
    ALL OVER AGAIN. YOU CANNOT READ OUT THE LOADED DATA TO WARP &
    BLENDING BOARD LATER.

■ Center angle display
Display the projection angle from horizontal and vertical direction.
Display the current center angle calculated by algorithm of spherical correction, horizontal or vertical curve. The display is to confirm the current figure as a rough standard. Therefore it could be different from actual angle.

■ Screen Position Setting
Adjust the position of the image projection screen.

■ Warp ON/OFF
Select ON or OFF of the curvature editing date which is sent to Warp & Blending Board. When selecting OFF, the original date input into DVI terminal is projected without change.

■ Blending ON/OFF
Select ON or OFF of the blending editing which is sent to Warp & Blending Board. When selecting OFF, the original date input into DVI terminal is projected without change.

■ Test pattern
Project a test pattern to help your editing. You can confirm the editing with comparing the computer screen with projected screen or the shape of the screen.

STEP-1 Configuration setting

9. Configuration setting

■ Resolution setting

Select "Resolution setting(R)" from "Setting (O)" in the menu to display the Resolution setting dialog box.
Set the signal resolution which is input into DVI terminal from the input menu. Adjust output resolution of the projector. When the pc is connected to the projector, resolutions will be automatically detedted.✳

 ✳When selecting VGA/480p, XGA/WXGA, SXGA/SXGA+ adjustment is required.
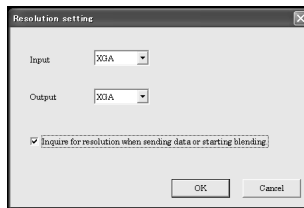
■ Communication setting

Set the communication between a computer connected with SERIAL terminal and Warp & Blending Board of a projector.

[Set the COM port]
Select COM port of the computer which is usually used for communication.

[Set the ID number]
Select the projector's ID number to send the edited data. When operating several projectors connected via Daisy chain, set the projector's ID No. then start to operate. Set projector's ID No. from the setting menu of the projector. (For details, refer to the owner's manual of the projector.)

English

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■ Optical axis setting

Set the optical axis.
Confirm the position of optical axis and set it by PIXCEL figure (Number of pixels).

X figure : Set the horizontal position on the screen. (adjustable range is 0 - 1024)
Y figure : Set the vertical position on the screen. (adjustable range is 0 - 768)
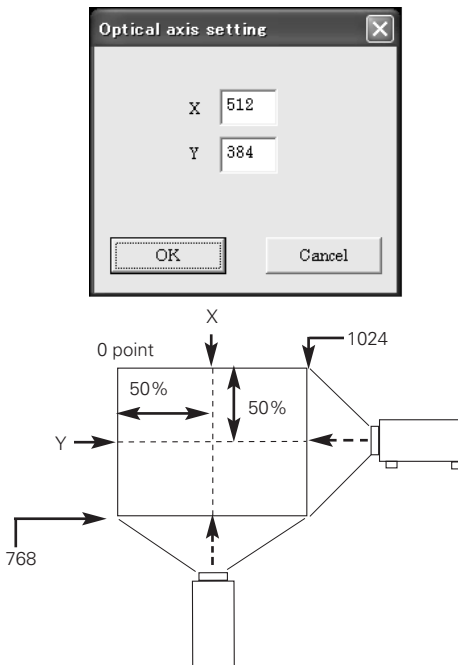Upper left side is X=0, Y=0 position.

Setting example:
When the optical axis is at the center both horizontally and vertically.
X figure = 1024/2 =512, Y figure = 768/2=384.
When the optical axis is 30% from left sid and 70% from a upper side;
X figure = 1024 x 0.3=307, Y figure = 768 x 0.7=537.

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■ View angle setting

Set the view angle of the projector.
The adjustable unit is 0.01 degree. (Example: 16 degree is input as 1600) The adjustable range is 2 - 150 degree.
When linearity of the vertical lines in the grid are not correct, in other words, the distance between vertical lines are not equal, check if the view angle is set correctly. For example, when the view angle is too small, the distance between vertical lines of the right and left edge become shorter to show the irregular surface of the cylinder.

CAUTION : WHEN THE PROJECTOR EQUIPPED WITH ZOOM FUNCTION, SET THE VIEW ANGLE EACH TIME.
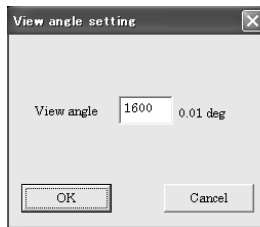
✽How to calculate the view angle
When projecting with no warp state (Select OFF in Warp ON/OFF) and calculating the view angle from dimentional measurement, the formula is shown below.

Calculate (w) and (d) with the same unit of length. (d) is the distance between the projector and surface (Its width is (w)) which is vertical to the optical axis.

View angle (degree) = (180 / 3.1416) * 2 *atan ((w/2)/d)
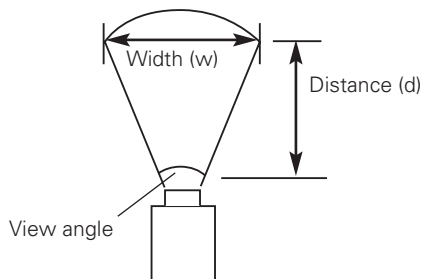
STEP-2 Image Editing

10. Image Editing

Select the editing type along with the shape of the screen and edit.

|	
1. Spherical editing	Edit to project on the spherical screen.
2. Horizontal curve editing	Edit to project on the horizontally curved screen.
3. Vertical curve editing	Edit to project on the vertically curved screen.
4. Keystone editing	Edit to project diagonally on the flat screen.
5. Grid [New] editing	Edit to project irregular surface.
6. Grid [Transition] editing	Edit the details of any of 1.Spherical correction, 2.Horizontal curve ,3.Vertical curve, 4. Keystone by cell unit
7. Blending	Edit to project one screen with using several projectors,

■ Spherical

This editing is to project on the spherical screen.

Select "Spherical correction③" from either "Type(T)" in the menu or the toolbar.

The grid screen for Spherical correction appears.
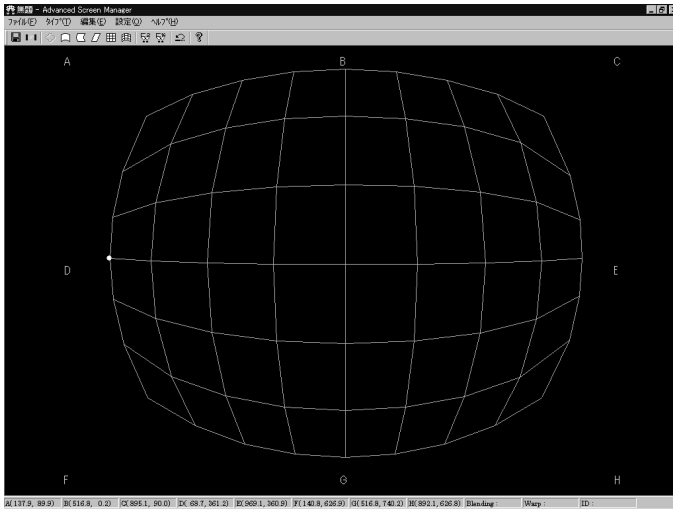
Basic adjustment

Adjustment points (Points enable to drag.) A to H (The points are different from editing screen.) are displayed on the screen. Click the nearest intersection point to the alphabet position, a point will be appear on the grid. Drag this point with a mouse and edit the grid shape.

You can also adjust with right click of a mouse and arrow key by 0.1 dot unit after selecting the adjustment points.

If the editing is not appropriate to project on a spherical screen or any of the corner points of the grid go over the size of the screen, the square grid will disappear. At this stage, you cannot edit each point nor send the data to the projector. Edit each corner point again to get the correct position then the grid will appear again and editing becomes possible.

Clue to adjust: First, drag each corner with a mouse pointer and make the grid screen smaller then start editing.

Spherical

Drag points with a mouse and edit the grid to spherical shape.

If the position of the grid screen is not correct, the grid lines in the square will disappear.

You can confirm the editing with sending the edited data to the projector. (See p29 ■ Sending)

You cannot drag each of B, D, E, G point when editing each of them to get the curved line and further editing become impossible on calculational basis or when each of A, C, F, H point go over the size of the screen.

Screen editing and reflection to the projected screen

See below about screen editing and reflection to the projected screen .

When moving each of B, D, E, G point equally to the edge of the screen.

        Concaved surface ... Curve become steeper

        Convexed surface ... Curve become gentler

When moving each of B, D, E, G point to the center of the screen.

        Concaved surface ... Curve become steeper

        Convexed surface ... Curve become gentler

When you want to get the shape with four lines rounded toward inside on the screen, select " View angle setting" and set the view angle to big figure such as 120 degree (Input 12000).
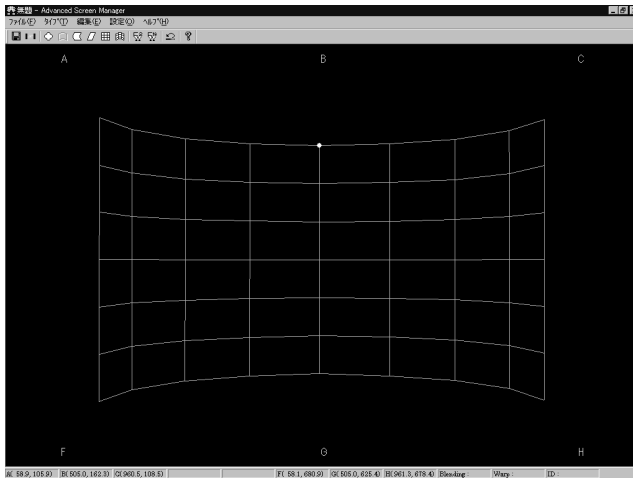
CAUTION: AFTER EDITING EACH OF A,C, F, H POINT, THE PREVIOUS EDIT FOR THE SPHERICAL ROUNDNESS TO EACH OF B, D, E, G POINT WILL BE RESET. WHEN EDITING SPHERICAL ROUNDNESS ,YOU NEED TO EDIT A,C, F, H POINTS FIRST.

When you want to edit more details by gird unit, Select "Grid [Transition]⑧" in the menu, and edit by grid unit after basic editing. Refer to ■ Grid [transition].

■ **Horizontal curve**

This editing is to project on the horizontally curved screen.
Select"Horizontal curve④" from either "Type(T)" in the menu or the toolbar.
The grid screen for Horizontal curve appears.

Edit the same way as spherical correction. See ■ Spherical correction for basic operation.
Drag B and G points with a mouse to adjust the roundness of cylinder.
When the distance between vertical lines are not equal, change the view angle figure from 10 to 60 (1000 - 6000) in the "View angle setting" menu. When the distance at the center is large and at both edges are small, set the large figure.
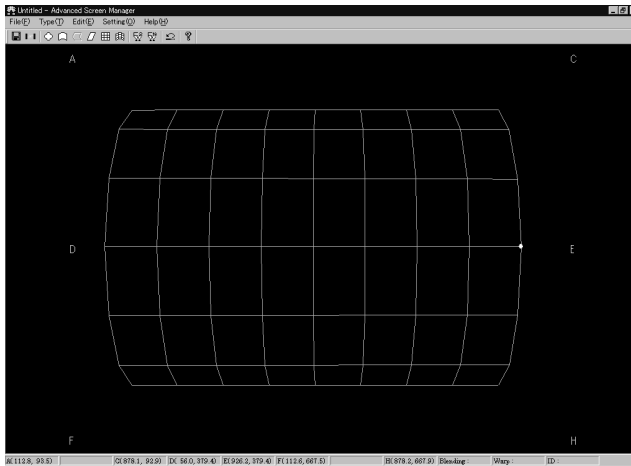
CAUTION: AFTER EDITING ANY OF A, C, F, H POINTS, THE PREVIOUS EDIT FOR THE SPHERICAL ROUNDNESS TO EACH OF B, G POINT WILL BE RESET. WHEN EDITING SPHERICAL ROUNDNESS,YOU NEED TO EDIT A, C, F, H POINTS FIRST.

When you want to edit more details by gird unit, Select "Grid [Transition]⑧" in the menu, and edit by grid unit after basic editing. Refer to ■ Grid [transition].

■ Vertical curve

This editing is to project on the vertically curved screen.
Select "Vertical curve⑤" from either "Type(T)" in the menu or the toolbar.
The grid screen for Vertical curve appears.

Edit the same way as spherical correction. See ■ Spherical correction for basic operation.

Drag D and E points with a mouse to adjust the roundness of cylinder.
When the distance between horizontal lines are not equal, change the view angle figure from 10 to 60 (1000 - 6000) in the "View angle setting" menu. When the distance at center is large and at both edges are small, set the large figure.

CAUTION: AFTER EDITING ANY OF A, C, F, H POINTS, THE PREVIOUS EDIT FOR THE SPHERICAL ROUNDNESS TO EACH OF D, E POINT WILL BE RESET. WHEN EDITING SPHERICAL ROUNDNESS,YOU NEED TO EDIT A, C, F, H POINTS FIRST.

When you want to edit more details by gird unit, Select "Grid [transition]⑧" in the menu, and edit by grid unit after basic editing. Refer to ■ Grid [transition].

English

■ **Keystone**

This editing is for projecting diagonally on the flat screen.
Select "Keystone⑥" from either toolbar or Type(T) in the menu.
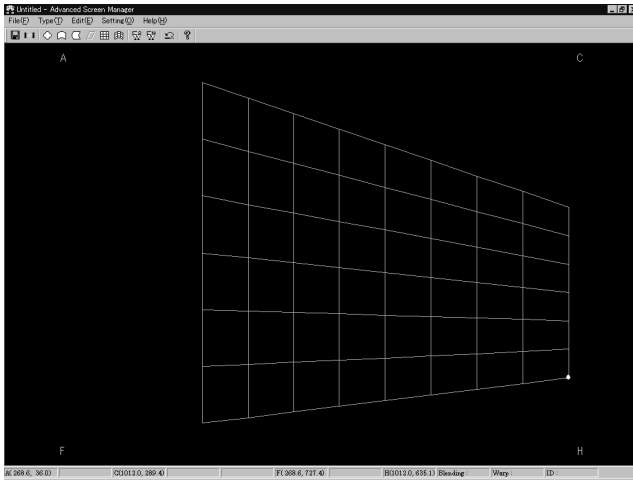
The grid screen for keystone editing appears.
Edit the image the same procedure as editing on the spherical screen.

Click any of A, C, F, H points on the grid by a mouse, the points will appear on the grid.
Edit the trapezoid with dragging the points by a mouse.
When you want to edit more details by gird unit. Select "Grid [transition]⑧" in the menu, and edit by grid unit after basic editing. Refer to ■ Grid [transition].

■ Grid (New)

This editing is to project on the slightly distorted screen. You can edit the details along with the projection screen.
Select "Grid correction⑦" from "Type(T)" in the menu bar or toolbar icon. The grid screen for Grid correction appears.
Edit each cell with dragging each point on the grid by a mouse.
Refer to See ■ Spherical, ■ Horizontal curve, ■ Vertical curve, ■ Keystone for basic operation. You cannot select "Grid [transition]⑧" for this operation.
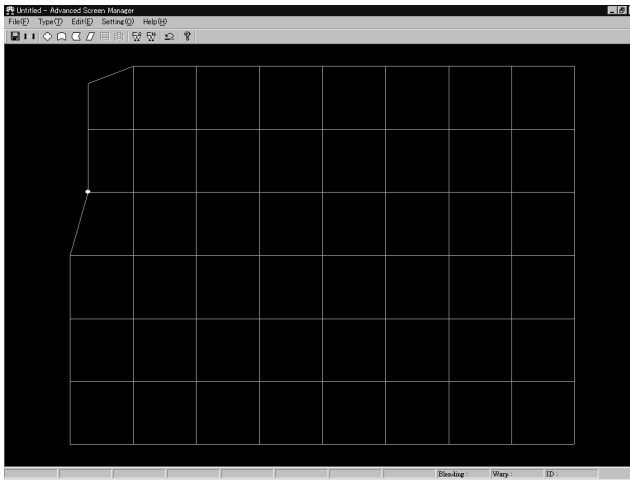
■ Grid [transition] correction

When you need further detailed editing after making basic editing in spherical correction, vertical curve, horizontal curve and keystone, select this function.
You can edit each cell individually by mouse drag.
Select this function then each adjustment item transit to this Grid correction [transition].
After transition, return to the previous item then each adjustment item will go back to the status before this adjustment..
Select "Grid [transition](I)" to display the dialog box. Select the editing type in the dialog.
Edit the same way as Grid correction.

Grid correction[transition]

Basic type   Horizontal curve

OK   Cancel
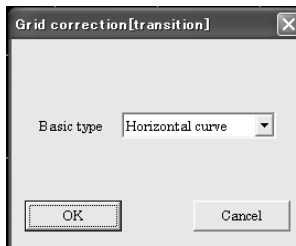
■ **Blending**

This function is to match the image levels of the overlapped parts of projected screens when projecting on one screen with using several projectors.
1. First, select the projectors to adjust.
   Input projector's ID No. in the STEP-1 ■ Communication setting.
2. Select "Blending setting (B)" from either toolbar or "Type(T)" in the menu then select 2Step or 16 Step depending on your editing. The Blending screen will appear.
   Editing differ between each editing step. Edit along with the procedures of each step.
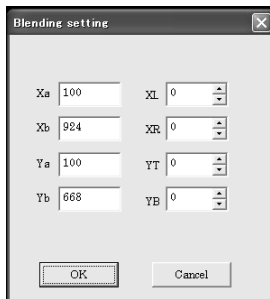
English
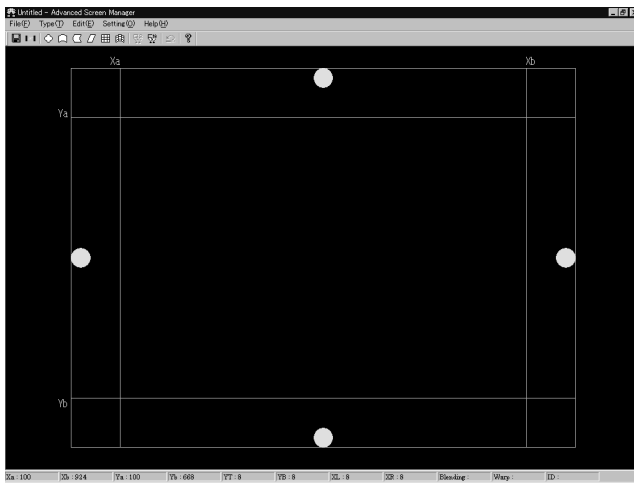
2 Step editing

1. Drag the lines or Xa, Xb, Ya, Yb on the editing screen and adjust the overlapped widht of the images. Each line show the screen position below.
   Xa = Left width of the screen, Xb = Right width of the screen,
   Ya = Top width of the screen ,Yb = Bottom width of the screen.
2. Adjust the offset level of the overlapped parts of the screen.
   Click the each circle dot on the screen to display the offset setting dialog. Set the offset level of each part.

Offset setting dialog

You can also set the figure with dialog by selecting "Blending setting (B)" in the "Setting (O)" menu.

Overlapped parts of the screen:

              Xa = Left width of the screen, Xb = Right width of the screen,

              Ya = Top width of the screen ,Yb = Bottom width of the screen.

The figure is PIXCLE (Number of pixcels) unit.
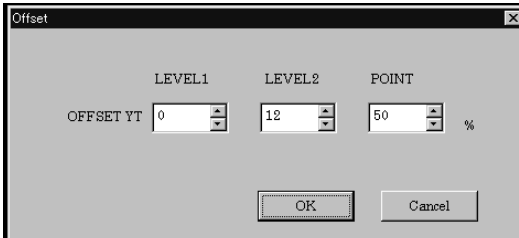Offset figure:

              YT = Top offset of the screen, YB = Bottom offset of the screen

              XL = Left offset of the screen, XR= Right offset of the screen,

3.Send the data to the projector and confirm the settings.
   Repeat image editing with step1-3 for each projector and adjust the overlapped parts to get the natural image.

16 Step editing

1. Drag the lines or Xa, Xb, Ya, Yb on the editing screen and adjust the overlapped width of the images. Each line shows the following screen position.
   Xa = Left width of the screen, Xb = Right width of the screen,
   Ya = Top width of the screen ,Yb = Bottom width of the screen.
2. Adjust the offset level and layer linearity of the overlapped parts of the screen. Click the each circle dot on the screen to display the offset and layer linearity setting dialog.
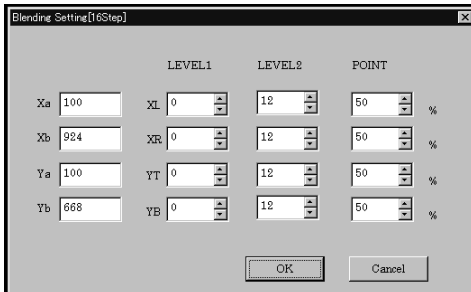

LEVEL1 = Offset figure outside edge of the screen. (1-15)
LEVEL2 = Set the position level set by the POINT. (1-16)
POINT = Set the point position of LEVEL 2. Set the position to locate which percentage from the screen edge. See the figure on the next page for setting each part. Refer to the chart on the next page.
You can also set the figure with dialog by selecting "Blending setting (B)" in the "Setting (O)" menu.

Overlapped parts of the screen;

Xa = Left width of the screen, Xb = Right width of the screen, Ya = Top width of the screen ,Yb = Bottom width of the screen. The figure is PIXCLE (Number of pixcels) unit.

LEVEL1 = Offset figure outside edge of the screen. (1-15)

LEVEL2 = Set the position level set by the POINT. (1-16)

POINT = Set the point position of LEVEL 2. Set the position to locate which percentage from the screen edge.
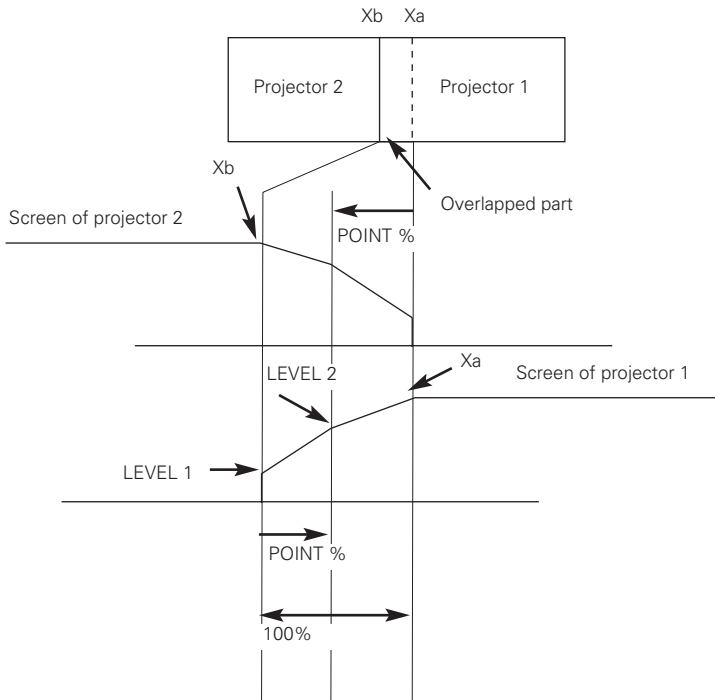

3.Send the data to the projector and confirm the settings.

Repeat step1-3 for each projector and adjust the overlapped parts to get the natural image.

■ Confirmation of edited image

This function is to confirm the each of Spherical correction, Horizontal curve, Vertical curve, Keystone, Grid correction with projecting the outline of edited images. To use this function, monitor out of the pc installed this software should be connected to DVI input terminal of Warp & Blending Board with digital signal. Select OFF in "Warp ON/OFF". Press [Alt] and [Z] keys at the same time to display the edited grid image. You can confirm how the edited image looks like.
Press [Esc] key to go back to the previous editing screen.

CAUTION; VIEW ANGLE AND OPTICAL AXIS ARE NOT REFLECTED TO THE PROJECTED SCREEN.

English
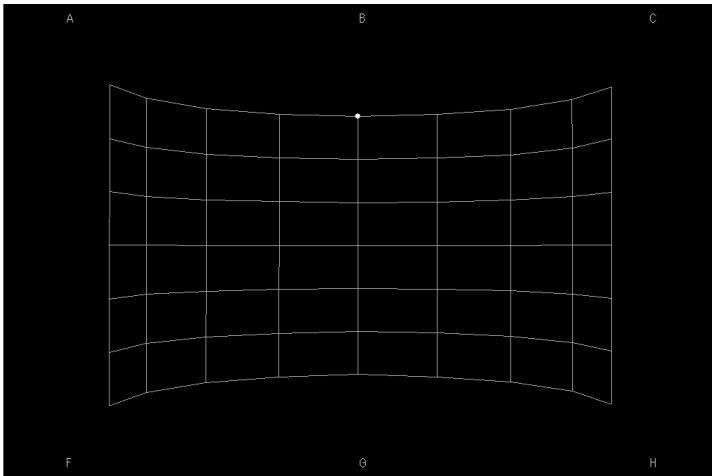
STEP-3 Data Sending

11. Data Sending

■ Sending

Send the edited data to Warp&Blending Board of the projector.
Select "Send(T)" from either "File(F)" in the menu or the toolbar icon to display the
send dialog. Press "Start" button then the data will be converted to the binary data and
sent to the Warp&Blending Board of the projector.

Parts name of the dialog and functions
①ID No. ....Display the ID No. of the projector to send the data. When you want
　　　　　　　　to change the destination projector, set the projector with ID No. with
　　　　　　　　STEP-1 ■ Communication setting.
②Start..............Start sending the edited data to the projector.
③Cancel...........Close the send dialog and go back to editing screen.
④Convert.........Display the conversion progress of binary data.
⑤Send ....Display the sending progress of the binary data to the projector.

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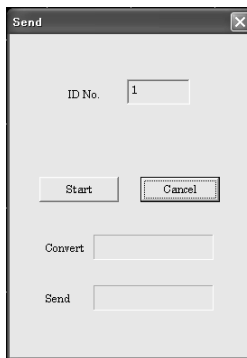
■ Center angle display

Display the current center angle calculated by spherical correction or algorithm of horizontal and vertical curve. This dialog only show the current figure as a rough standard and you cannot change the figure.
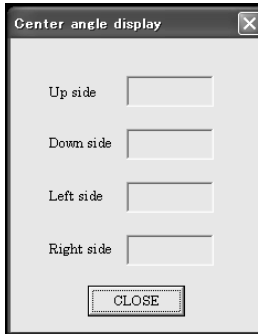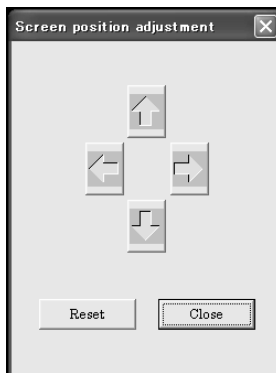

■ Screen Position Adjustment

Adjust the screen position. Before adjustment, set the communication with STEP-1
■ Communication setting dialog.
Press Reset button to reset the position to standard location.

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English

■ **Warp ON/OFF**

This function is to select ON/OFF of Warp. Before operation, set the communication with STEP-1 ■ Communication setting dialog.
When selecting ON, the edited data which was sent to Warp & Blending Board is projected. When selecting OFF, the original image input into DVI terminal is projected without change.

Warp ON/OFF

ON   OFF

Close

■ **Blending ON/OFF**

This function is to select ON/OFF of Blending. Before operation, set the communication with STEP-1 ■ Communication setting dialog.
When selecting ON, the edited data is projected. When selecting OFF, the original image input into DVI terminal is projected without change.

Blending ON/OFF

ON   OFF

Close
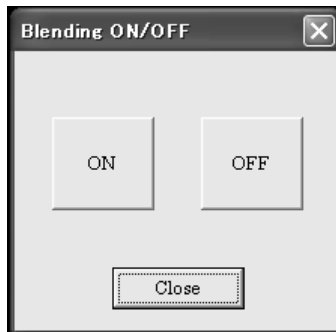
■ **Test pattern**

This function is to confirm the edited images. Select "Test pattern (P)" to display test pattern below which is based on the editing you have made. With watching this screen, confirm the editing such as screen distortion, linearity, screen position. Select "Test pattern(P)" in the "Setting (O)" menu to display the test pattern.
To cancel Test pattern, press [Esc] key.
When using Test pattern function, select OFF in "Warp ON/OFF(W)" function.
To use this function, monitor out of the pc installed this software should be connect-ed to DVI input terminal of Warp & Blending Board with digital signal.