

DS2 User Guide

This user guide provides basic instructions for setting up SEADA DS2 Edge Blending Controller and how to create eye catching video projection mapping using its management software.



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
i. Set up connection

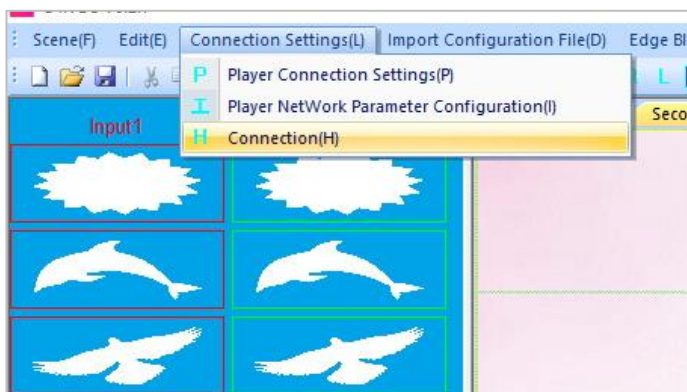
1. Set up the static IP address on control PC

The default IP address of DS is **192.168.15.98**. The control PC needs to be at the same range of controller in order to connect to the DS

- Open the 'Ethernet Properties' windows on the Control PC
- Highlight the TCP/IPv4 in Networking and click the Properties button to open the TCP/IPv4 Properties window
- Change the 'Obtain an IP address automatically' to 'Use the following IP address to set up a static IP address'
 - IP address: any address between **192.168.15.1** and **192.168.15.255** except the address which has been taken by the Video Wall Controller
 - Subnet mask: **255.255.255.0**
 - Default Gateway: **192.168.15.1**.

2. Connect the control PC to DS2 with network port. Ensure the 'Net' port on DS is connected, not the 'COM' port

3. Open the DS2 software  and click 'Player Connection Settings' or 'P' button on toolbar to open the connection dialog box.



In this dialog box, all the DS2 units connecting to this control PC will be shown in the list. Highlight DS to be connected and then press '**Connect**' button to connect. A '**connected**' message will be shown once the connection is established.

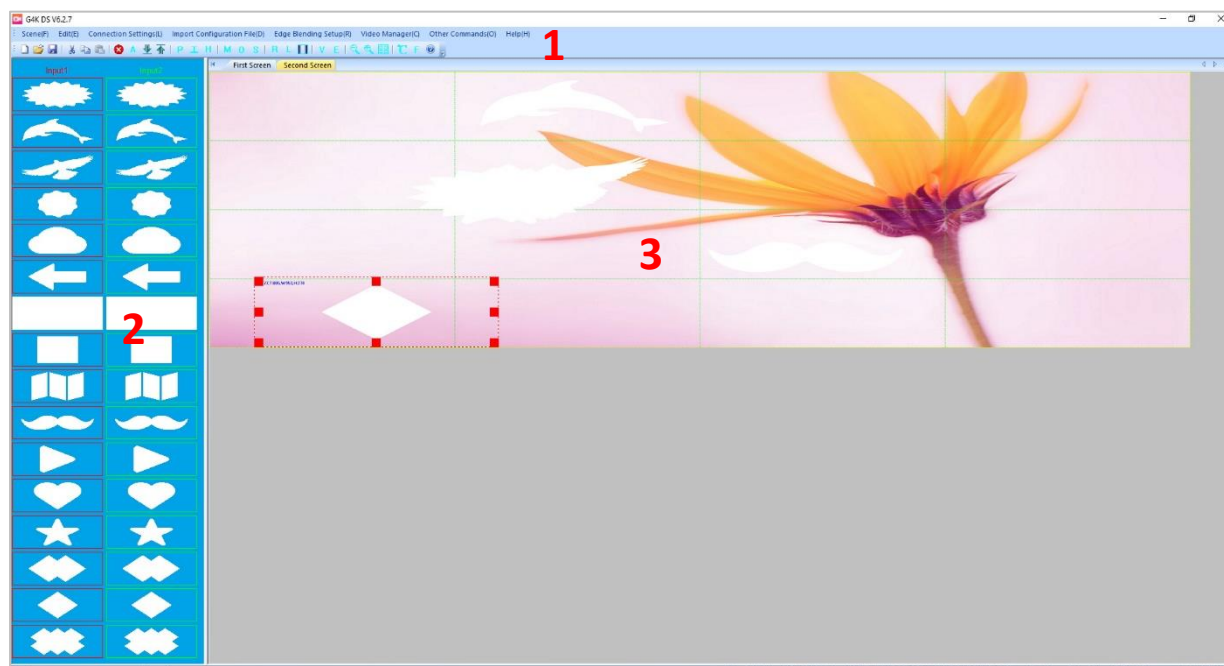
Note:

if the DS2 software can not be run on the control PC

Reason	VC++ redistribution not installed at current OS
Solution	For 32bit OS, please install the 'vcredist_x86.exe' coming with the software
	For 64bit OS, please install the 'vcredist_x64.exe' coming with the software

If a 'Please change your display scale to 100%' message dialog box coming up, please change scale back to 100% in control PC's Display Settings

ii. UI



G4KDS management software provides a GUI in ribbon style for the users and enables users to interactively move, resize, position and crop any input capture windows. The whole GUI consists of three main parts:

1. Toolbar

Users can manage the DS units with the commands on the toolbar

2. Video Input List

It lists all the different shapes of the windows. Users can drag and drop onto display wall for video input 1 and 2.

3. Projection Display Area

It shows the layout of current windows on display wall and users can manage the inputs windows here via mouse

It enables users to create and save scenes and load them whenever needed. Moreover, it also allows users to create a layout looping schedule to automatically switch between different scenes.

- Friendly user interface
- RS232 and Telnet
- Create, copy, save and delete layouts
- Looping ability between layouts
- Position, re-size and crop input windows
- Drag and drop easy operation for HDMI captures

iii. Operation

1、 Scene

Users can set up the scene here for the layout of the input videos on the wall. The scene will be saved onto control PC, not onto DS itself and the amount of the scenes can be saved are unlimited here. Only the layout of the input video sources will be saved here, not the video played by built-in media player.



1.1 New Scene

Create a new blank scene

1.2 Open the Scene

Open an existing scene

1.3 Save Scene

Save the changes to the current scene

1.4 Save As

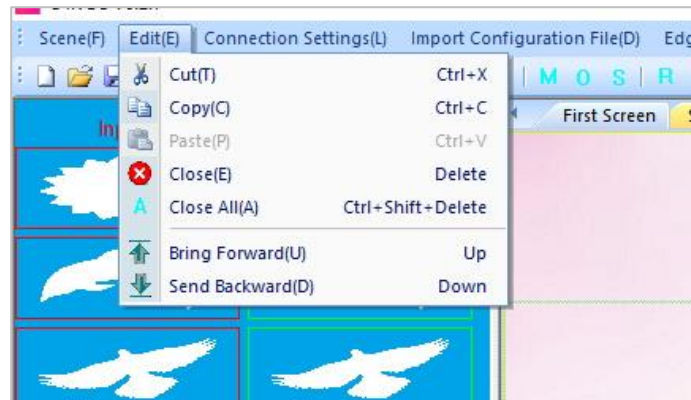
Save the current scene to the different name

1.5 Exit

Exit the software

2、Edit

Users can edit the opened windows of HDMI captured videos in Projection Display Area



2.1 Cut

Cut the highlighted the video window on the Projection Display Area

2.2 Copy

Copy the highlighted the video window on the Projection Display Area

2.3 Paste

Paste the copied/cut the video window on the Projection Display Area

2.4 Close

Close the current highlighted on the Projection Display Area

2.5 Close All

Close all video input windows on the Projection Display Area

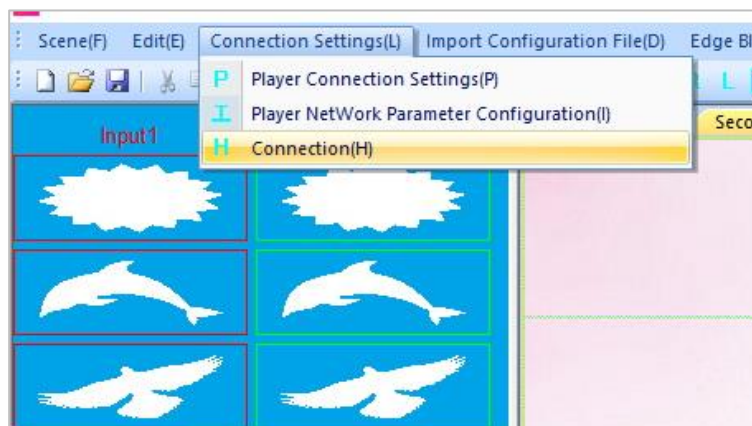
2.6 Bring Forward

Bring the highlighted video input window forward

2.7 Send Backward

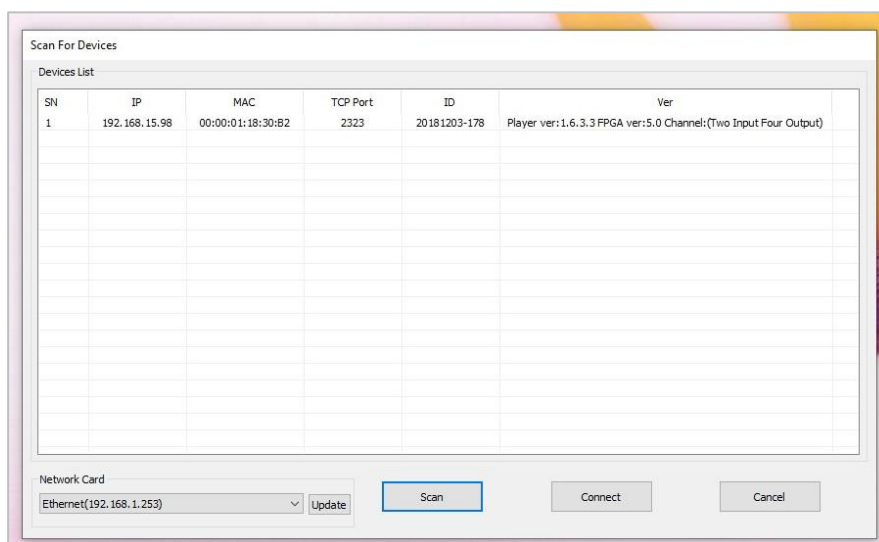
Send the highlighted video input window backward

3、 Connection Settings



3.1 Player Connection Settings

All DS2 units connecting to this control PC will be shown in the list. Highlight DS to be connected and then press 'Connect' button to connect. A 'connected' message will be shown once the connection is established.



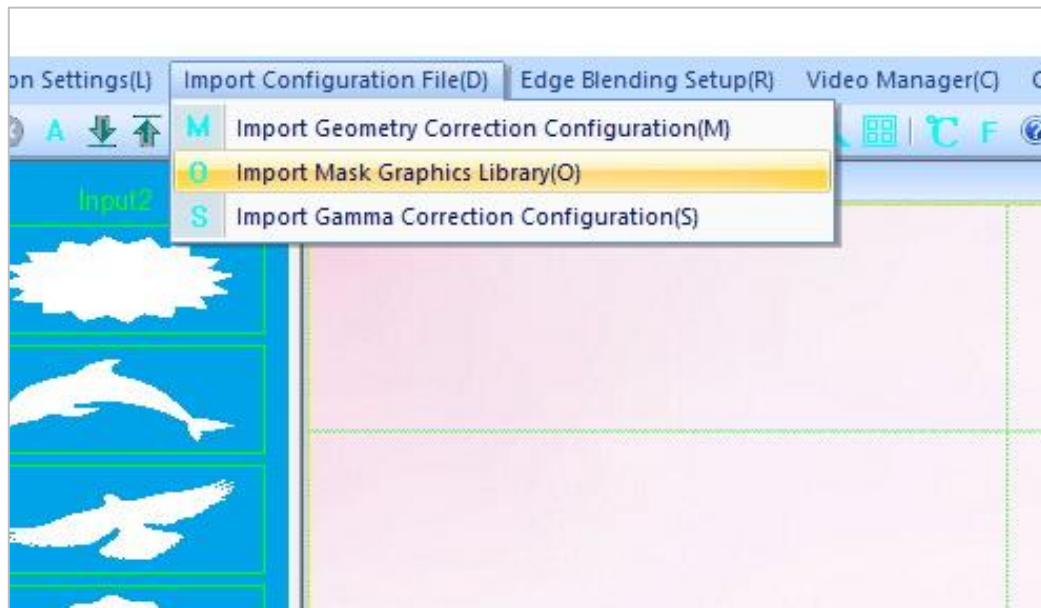
3.2 Player Network Parameter Configuration

Users can change the network settings of the connected DS2 in this section.

3.3 Connection

Once being pressed, control PC will connect to the DS automatically

4、 Import Configuration File



4.1 Import Geometry Correction Cofiguration

Users can import the geometry settings from the previous saved settings to the new DS unit.

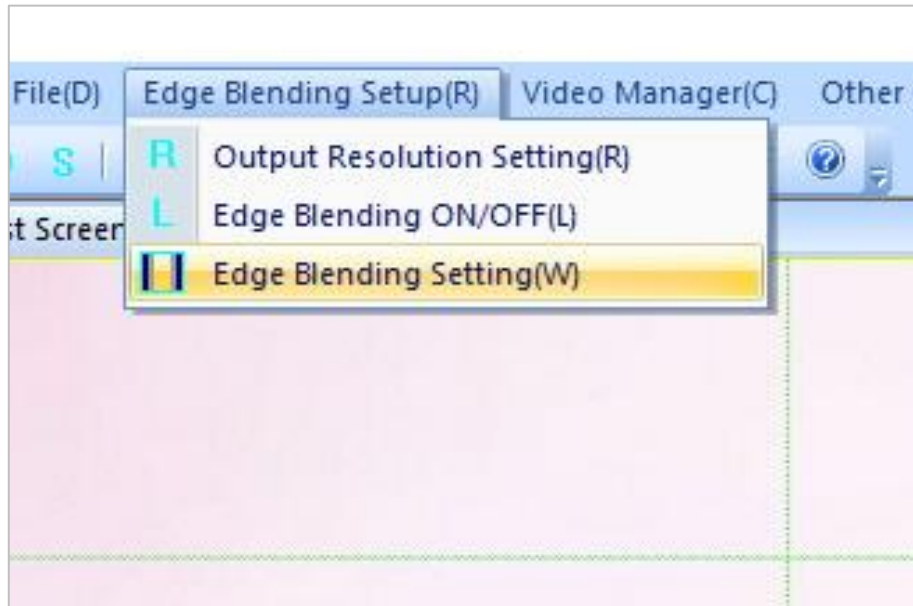
4.2 Import Mask Graphics Library

Users can import the new shape of templates for the input video sources windows.

4.4 Import Gamma Correction Cofiguration

Users can import the Gamma settings from the previous saved settings to the new DS unit.

5、 Edge Blending Setup



5.1 Output Resolution Setting

Users are able to set up the output resolution to match the projectors to be used in the edge blending.

(1024X768@60Hz 、 1280X768@60Hz 、 1280X800@60Hz 、 1280X1024@60Hz 、 1920X1080@60Hz)

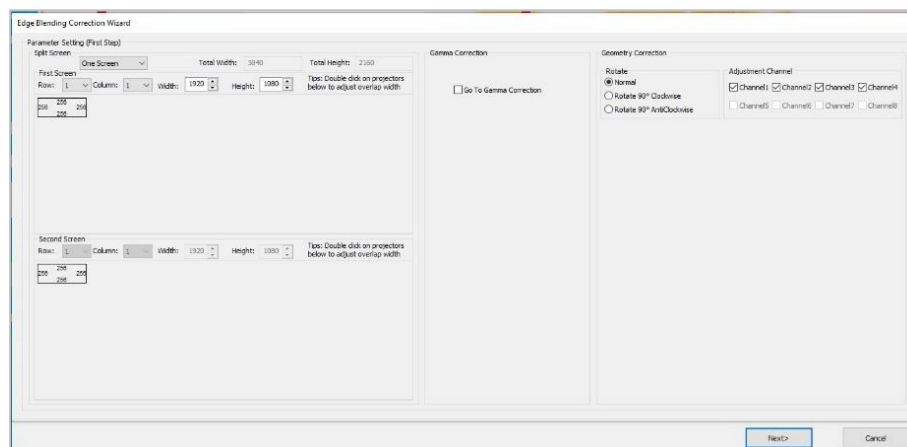
users are also able to customize the output resolution in this section.

5.2 Edge Blending On/Off

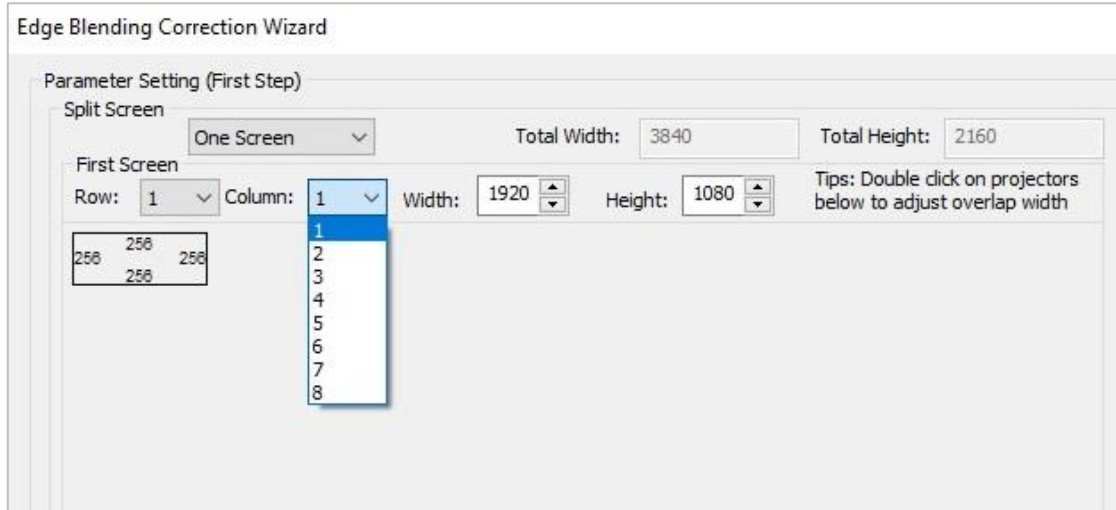
Users can turn on/off the edge blending gamma correction here.

5.3 Edge Blending Setting

Users set up and tune the edge blending in this section to do **Geometry** and **Gamma** correction and eventually to get projectors to form a uniform display image wall.



- 1) set up how many outputs and also the layout of the projectors. e.g. 1 x 2



Edge Blending Correction Wizard

Parameter Setting (First Step)

Split Screen: One Screen (dropdown)

Total Width: 3840 Total Height: 2160

First Screen

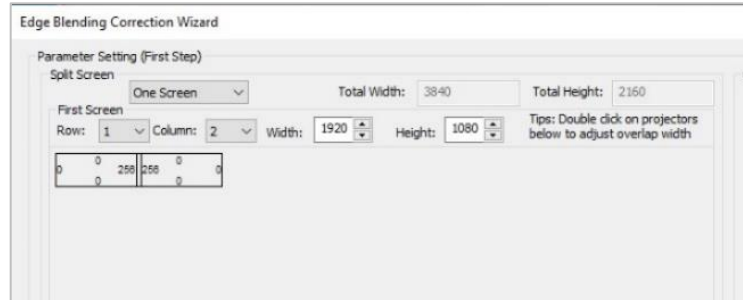
Row: 1 (dropdown) Column: 1 (dropdown)

Width: 1920 Height: 1080

Tips: Double click on projectors below to adjust overlap width

Projector layout diagram showing a 1x1 grid of projectors with an overlap width of 256 pixels.

- 2) To adjust the edge blending overlap width, the default is 256 pixels,



Edge Blending Correction Wizard

Parameter Setting (First Step)

Split Screen: One Screen (dropdown)

Total Width: 3840 Total Height: 2160

First Screen

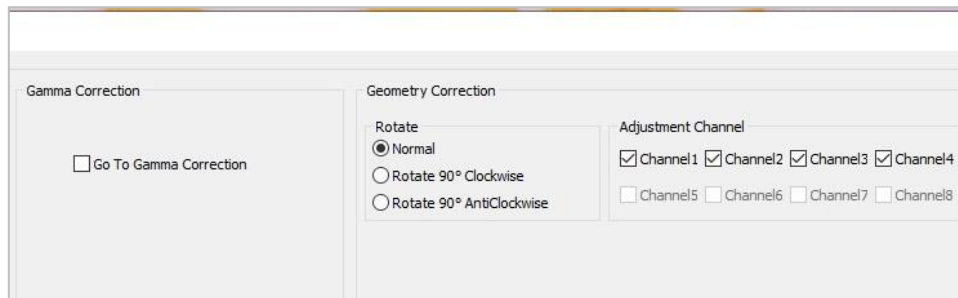
Row: 1 (dropdown) Column: 2 (dropdown)

Width: 1920 Height: 1080

Tips: Double click on projectors below to adjust overlap width

Projector layout diagram showing a 1x2 grid of projectors with an overlap width of 256 pixels.

- a. Rules of thumb, the physical projectors overlap width on the wall needs to be bigger than edge blending width.
 - b. if the projectors overlap width on your wall is smaller than 256 pixels, users can change the edge blending width here by double clicking the projector box and enter the new number
 - c. Users can always come back to change the width of edge blending overlap
- 3) Choose how many channels here for the edge blending and then press 'Next' to go to 'Geometry Correction' Step
 - a. 'Go to Gamma Correction' here is the option for users to jump to the gamma correction without doing geometry correction.



Gamma Correction

☐ Go To Gamma Correction

Geometry Correction

Rotate

☒ Normal

☐ Rotate 90° Clockwise

☐ Rotate 90° AntiClockwise

Adjustment Channel

☒ Channel1 ☒ Channel2 ☒ Channel3 ☒ Channel4

☐ Channel5 ☐ Channel6 ☐ Channel7 ☐ Channel8

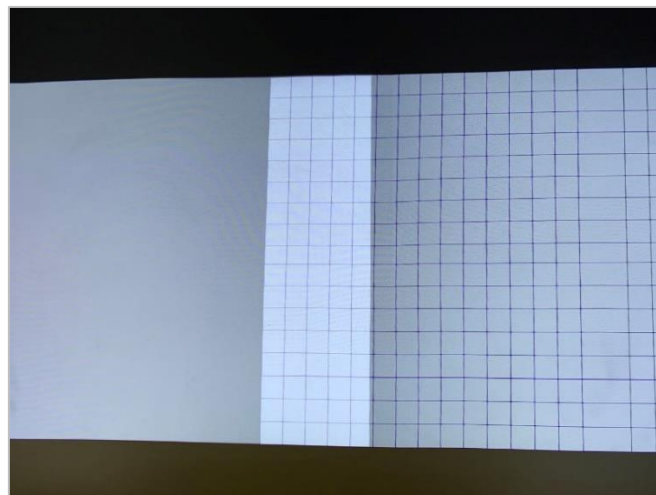
5.3.1 Geometry Correction

Geometry Correction (often referred to as Image Warping) is the process of digitally manipulating image data such that the image's projection precisely matches a specific projection surface or shape. Image geometry correction compensates for the distortion created by off-axis projector or screen placement or non-flat screen surface, by applying a pre-compensating inverse distortion to that image in the digital domain.

First of all, the software shows the first output channel with grid of 1920x1080 and it will be displayed onto the wall as well. Users can use mouse scroll wheel to change the size of the grids.



The 2nd output will show the default of grids of 64 pixel size on display wall (see image below). users can use comma ',' on control PC keyboard to enlarge the size of the grids to 1920 so the lines of channel 1 will be more visible.



Operations:

1. Select adjustment point (small circle) using mouse left click button
2. Use mouse scroll button for Zoom of grids for current channel and use ',' and '.' keys on keyboards for Zoom of grids for adjacent channel

3. Move mouse or keyboard (up, down, left, right) to do the adjustment
4. Once done adjustment, click 'Next Channel' for next channel adjustment
5. Click 'Save Adjustment Results' to save all the settings
6. Press 'Next' to finish the geometry correction and go into gamma correction

Hotkeys:

Shift + H to select the whole row

Shift + V to select the whole column

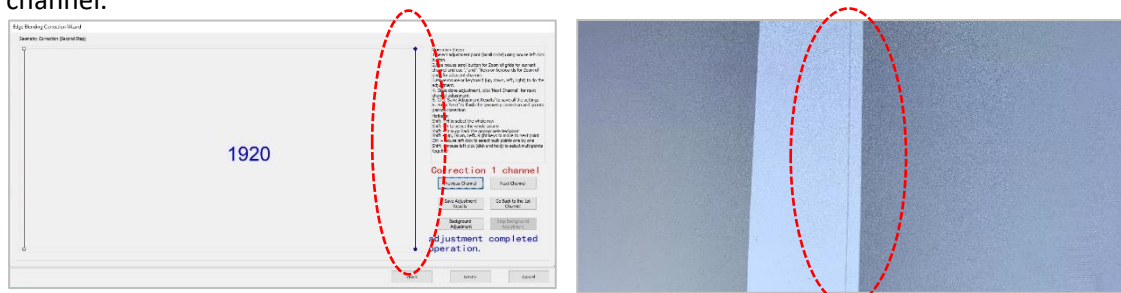
Shift + D to go back the original selected point

Shift + Up, Down, Left, Right keys to move to next point

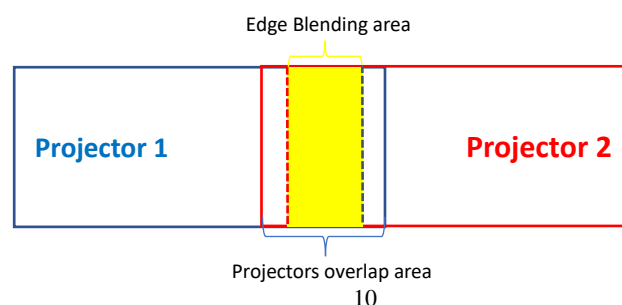
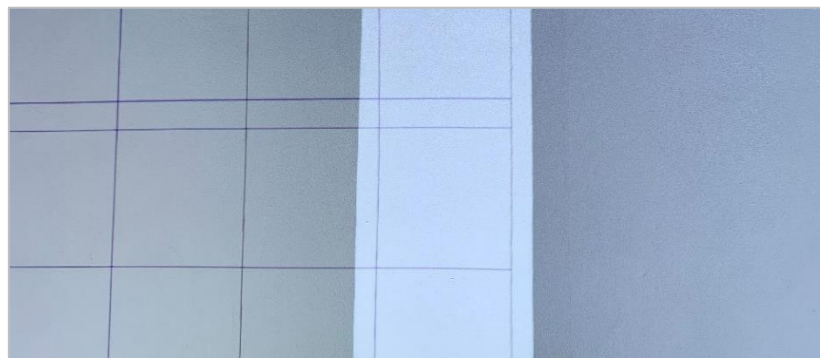
Ctrl + mouse left click to select multi points one by one

Shift + mouse left click (click and hold) to select multi points together

Step 1: Move the right line of channel 1 (two adjustment points at 1920 x 1080 grid size) to left to make sure the edge blending area is right in the centre of overlap area of two projectors (see figure below). Once it is done, press 'Next Channel' to be ready for adjustment of next channel.

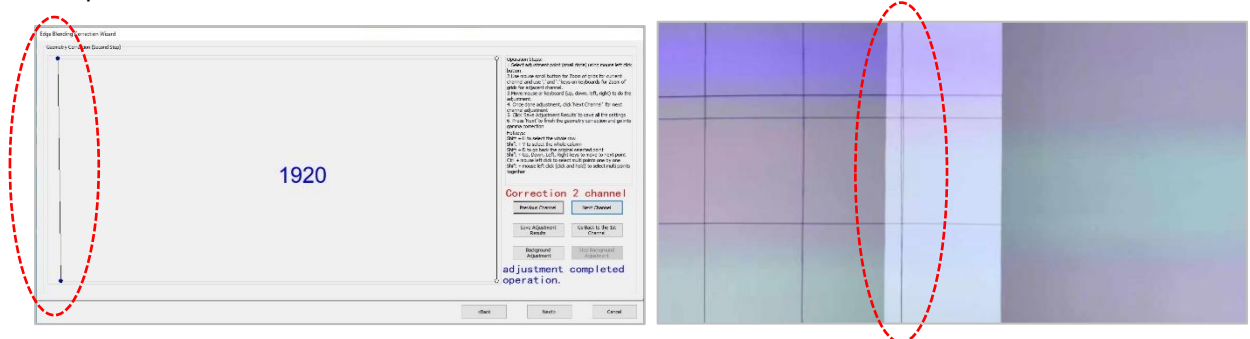


Tip: users can change grid size of the current output channel (projector 1) to the same size as edge blending width (e.g., if the edge blending overlap setting is 256, change the grid size to 256) to check the position of the edge blending area in projectors overlap area.

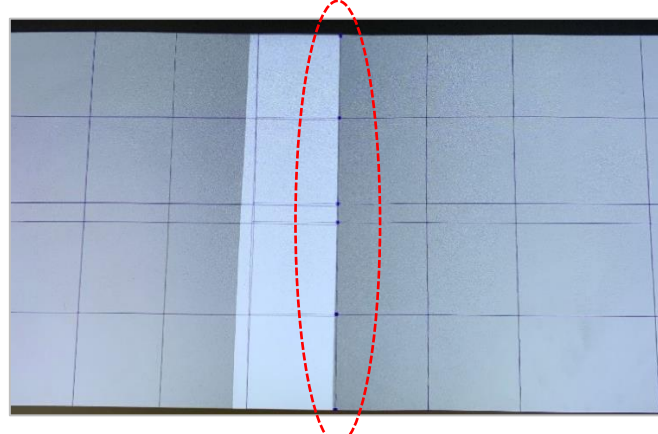


Step 2: Now in adjustment of Channel 2. Use ‘,’ or ‘.’ on keyboard to change the channel 1 grid size to the same size of Edge Blending area width (see figures above).

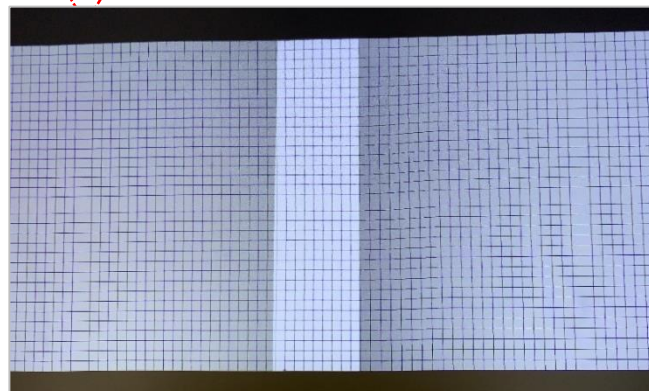
And then move the left line (two adjustment points) of channel2 to overlay the left line of the last grid of channel 1 at the right side. Adjust the left two points of channel 2 to match the two points of channel 1.



And then use mouse scroll wheel to change the current channel (channel2) grid size to Edge Blending Area width size (e.g. 265 or 128, or 512 depending on the original setting at the beginning). Move the right line (make sure all the points on the line are selected) of the grid at far left of channel 2 to overlay with the right line of the last grid of channel 1 at the right side (see image below). Now the Edge Blending Area has been set up.



Step 3: Fine tune geometry correction for the Edge Blending area. Change the grid of channel 1 and 2 step by step to smaller grids size and move the points and lines of channel 2 to match the channel 1's points and lines accordingly. Once fine tune down to 32 pixels and points movement finished, press ‘Save Adjustment Results’ to save all the results and press ‘Next’ to go to Gamma Correction.



The DS unit has the ability to crop the output to match the projection wall shape. Users can adjust the shape in ‘Background adjustment’

5.3.2 Gamma Correction

User can adjust brightness for the Edge Blending area to match the rest of the projection. e.g. for a two-projection edge blending, users need to adjust the brightness of 'right of Channel1' and 'left side of Channel 2').

Users can set up the sync of both channels, so when channel 1-right is adjusted, channel2-left will be adjusted automatically.

The brightness always starts from '256' and finishes at '0'. Users can use mouse scroll wheel to change the amount of adjustment points.

If the two projectors have brightness difference, DS is able to change the whole projector output brightness by using different Luminance Coefficient.



Once the gamma correction is done, press the 'cancel' to save and exist the edge blending set up. Now the edge blending processing is done (see below the video wall of 1x2 edge blending with two projectors)

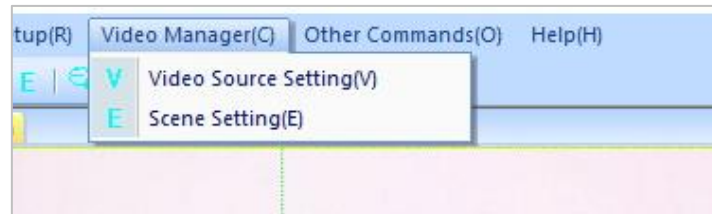


Tip: Only the 'right' of channel1 and 'left' of channel 2 need the gamma correction with this curve adjustment. The adjustment points for top, bottom and the other lines all need to be set up at 256 otherwise users will see the black stripe on display wall.

6、 Video Manager

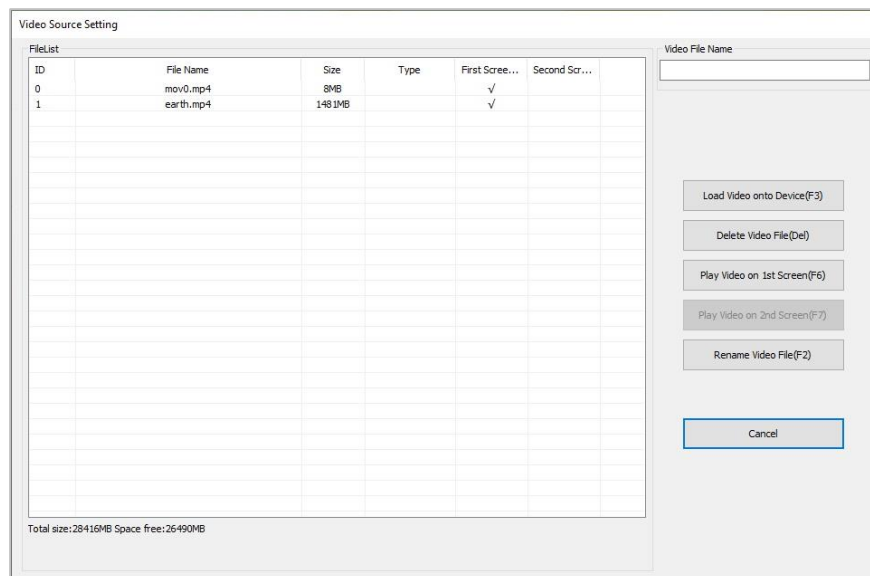
Users can manage the video source played on built-in media player and the captured videos from the HDMI ports here.

Users can set up the preset scenes in this section and recall these scenes using any 3rd party controller via RS232 port.



6.1 Video Source Setting

Users can manage the video files on the built-in media player in this section.



1) Load Video onto Device

Users can load the video sources onto built-in media player from the control PC

Note: the single file size needs to be smaller than 2GB

2) Delete Video File

Users can delete the unwanted video from DS device by highlighting the file in the File List and pressing the 'Delete Video File' button.

3) Play Video on 1st Screen

DS has ability to create two separated edge blending walls on one unit. e.g., users can create two 1x2 edge blending walls on a 4 channels output DS.

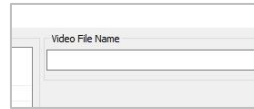
Highlight the file in the File List and press this button to play the very video on 1st edge blending wall

4) Play Video on 2nd Screen

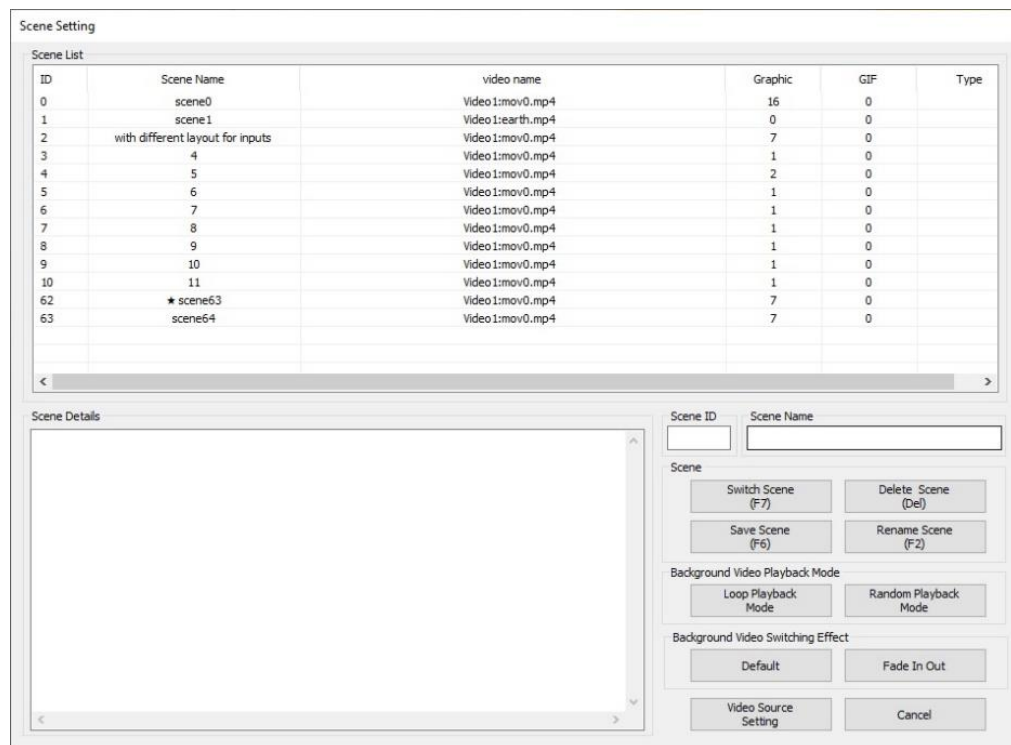
Highlight the file in the File List and press this button to play the very video on 2nd edge blending wall

5) Rename Video File

Highlight the file in the File List and press this button to rename the video name in the list to the new name users entered in 'Video File Name'



6.2 Scene Setting



Scene Setting

ID	Scene Name	video name	Graphic	GIF	Type
0	scene0	Video1:mov0.mp4	16	0	
1	scene1	Video1:earth.mp4	0	0	
2	with different layout for inputs	Video1:mov0.mp4	7	0	
3	4	Video1:mov0.mp4	1	0	
4	5	Video1:mov0.mp4	2	0	
5	6	Video1:mov0.mp4	1	0	
6	7	Video1:mov0.mp4	1	0	
7	8	Video1:mov0.mp4	1	0	
8	9	Video1:mov0.mp4	1	0	
9	10	Video1:mov0.mp4	1	0	
10	11	Video1:mov0.mp4	1	0	
62	★ scene63	Video1:mov0.mp4	7	0	
63	scene64	Video1:mov0.mp4	7	0	

Scene Details

Scene ID: Scene Name:

Scene

Switch Scene (F7) Delete Scene (Del)

Save Scene (F6) Rename Scene (F2)

Background Video Playback Mode

Loop Playback Mode Random Playback Mode

Background Video Switching Effect

Default Fade In Out

Video Source Setting Cancel

1) Scene

Scene here includes the background video from the built-in media player and also the input signal windows in projection display area. The preset scenes will be saved onto DS2 device itself.

a. Switch Scene

Highlight the scene and press this button to switch to the highlighted scene

b. Delete Scene

Delete the highlighted scene

c. Save Scene

Enter the 'Scene ID' and 'Scene Name' to save the current layout

d. Rename Scene

Highlight the scene and enter the new scene name in 'Scene Name'. press this 'Rename Scene' button to rename the highlighted scene.

2) Background Video Playback Mode

a. Loop Playback mode

System will play the current video from the built-in media player in a loop mode

b. Random Playback Mode

System will play the current videos from the built-in media player in a random mode.

The HDMI input signal windows layout will not change.

3) Background Video Switching Effect

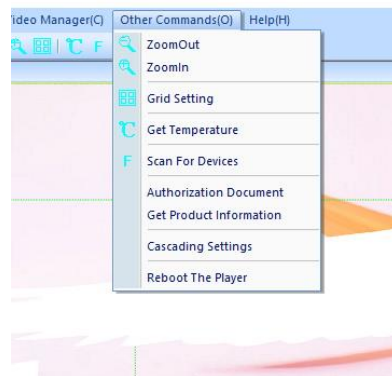
a. Default

b. Fade In Out

4) Video Source Setting

5) Cancel

7、 Other Commands



7.1 ZoomOut

Zoom out the projection display area.

7.2 ZoomIn

Zoom in the projection display area

7.3 Grid Setting

Set up the number of grids in Projection Display Area in software UI

7.4 Get Temperature

Check CPU and FPGA live temperature.

7.5 Scan for Devices

Scan and find all the DS devices on the same network

7.6 Authorization Document

Users can authorize the locked features here

7.7 Get Product Information

It shows the current Firmware version of FPGA

7.8 Cascading Settings

Cascading Settings

Parameter

Cascade Type

☒ Independent
☐ Master
☐ Slave

Cascade IP(If it is not used, the total is zero)

IP1:	0	.	0	.	0	.	0
IP2:	0	.	0	.	0	.	0
IP3:	0	.	0	.	0	.	0
IP4:	0	.	0	.	0	.	0
IP5:	0	.	0	.	0	.	0

OK

Cancel

- 1) Independent: unit is used as stand alone
- 2) Master: unit is set up as master unit in the system
- 3) Slave: unit is set up as slave unit in the system to follow master unit

7.9 Reboot the Player

User can remotely reboot the DS unit in this section.

8、 Command lines

Users can use the command lines below to recall preset scenes on DS2 via RS232 port

Port Settings

BaudRate = 9600

DataBit = 8

StopBit = 1

Parity = 0

System uses HEX for the command lines

Load the scene

Instruction Format	Scene_id	
Function	Recall the preset scene	
Parameters	Scene_id	The scene ID which need to be loaded.

【Example】03

To load the 4th layout

The unit can have up to 64 scenes, so the Scene_id for recall them are from 00 to 3F

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