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3 WINDOWS DISPLAY BASED ON 4K1K PIXEL TO PIXEL SPLIT

4:4:4 10BIT 60HZ PROCESSING

VS2

USER MANUAL

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Content

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1. Product Features

- Support 4 Port Split in Any Configuration

- Seamless Switching Between Any Signals

- Smooth Fade in Fade out Transition

- Support 4Kx2K 8Kx1K 2Kx4K Pixel to Pixel Split

- Flexible Quad Layers display

- Support 4 Optional Module

- RCA Audio Output Jack

- Third Party Control with Open Protocol

- Optional Genlock Input for Cascade Split

2. Product Introduction

VS2 is a 4 output channels video processor. Can support flexible 4 port split with 4 layers configuration. It can realize 3 Windows Display based On 8Kx1K Split. Ideal for large scale or multiple layers project.

VS2 Diagram Solution
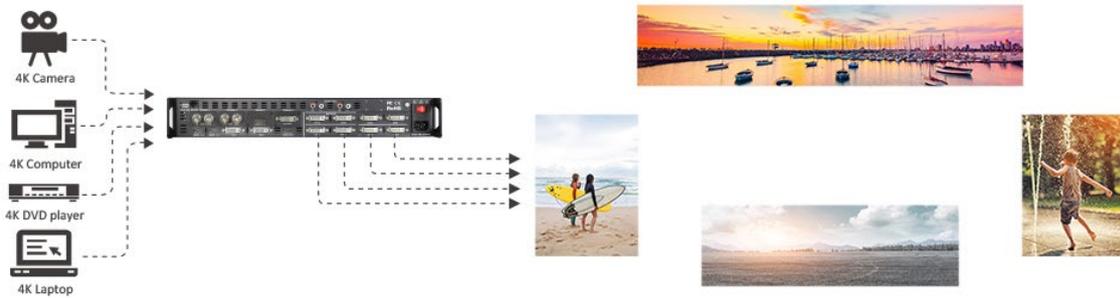
3. Hardware Overview

3.1 Front Panel
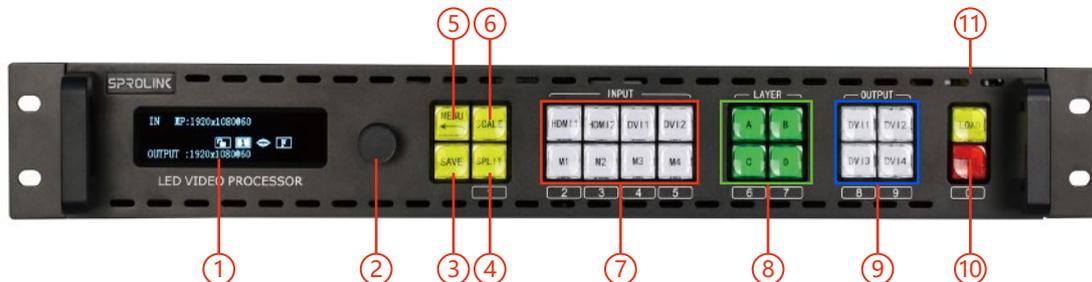
OLED Display Panel

1	Display the current working status and menu for buttons control.

Knob

|	
2	For menu selection: rotating knob to find the option & press the knob to confirm.

Buttons

3	SAVE Button To save the parameters after setting, by using "LOAD" to load the saved data. Press SAVE, the buttons "SCALE.....BLACK" are representing saving modes of 1\2\3\4\5\6\7\8\9\0 separately, press any button to save the current parameters to the specified saving mode.
4	SPILT Button Enter to the cascade split model and set the split parameters
5	MENU Button Press to enter to the menu, by using knob to find the specified menu, press MENU again to return to the previous menu

6	**Scale Button** To adjust the size and position of the image by the number buttons"1-0" under M1-DVI4, or using the knob to adjust the number.
7	**INPUT Button** To select source signal, the button lights up while used as input. When there are more than 2 buttons lighting up, the one flashing is the one just be chosen, and the steady lighting one is the source signal displayed, M1 represents SDI input.
8	**ABCD Layer Button** For the use of layer editing, adding and size changing
9	**DVI1 & DVI2 Output Buttons** For the use of adding layers A,B,C and D in corresponding output.
10	**TAKE Button** Program and preview switching under Preview model
11	**LOAD Button** To load the preset saving modes. Press LOAD, buttons of "SCALE---BLACK" are representing saving modes of 1\2\3\4\5\6\7\8\9\0, press any of the key to load the corresponding saving modes.

3.2 Back Panel
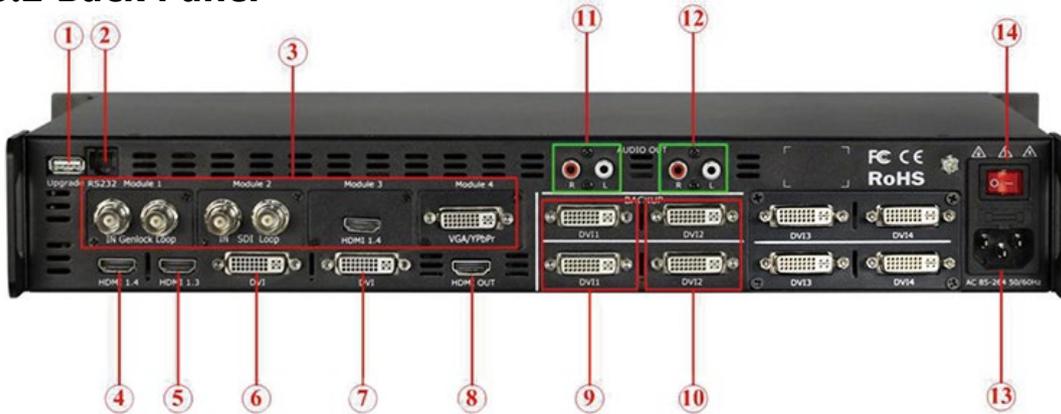
Comm & Update Connector

1	USB port for update
2	RS232 port for the use of communication and API and Third-Party control
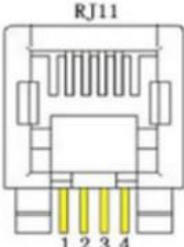
Input Connector

3	Optional input module Support 4 input modules with HDMI\DVI\VGA\SDI\USB
4	HDMI1.4 input Support 3840*2160@30HZ & 4K1K\2K1K inputs and customized input
5	HDMI1.3 input Support 2K1K input and customized input resolution
6	DVI3 Input Support 2K1K input and customized input resolution
7	DVI4 Input Support 2K1K input and customized input resolution

Output connectors

8	HDMI Loop	The current image or window will be looped automatically without output processing
9	DVI1 Output	Support 2.5million pixels with widest 3840 pixels or highest 1920 pixels
10	DVI2 Output	Support 2.5million pixels with widest 3840 pixels or highest 1920 pixels
11	RCA1 Audio Output	External (LR stereo) output port match with the DVI1 output video
12	RCA2 Audio Output	External (LR stereo) output port match with the DVI2 output video

**Power Supply**

|	
13	IEC- Power connector：AC 85-264V，50/60HZ，maximum power 45W
14	Power switch

4. Operations

- ➤ Menu structure
- ➤ Output Resolution
- ➤ Two Split
- ➤ Four Split
- ➤ Multi Picture
- ➤ Preview Mode
- ➤ EDID Management
- ➤ Volume
- ➤ System
- ➤ Factory reset
- ➤ Language

4.1 Menu Structure
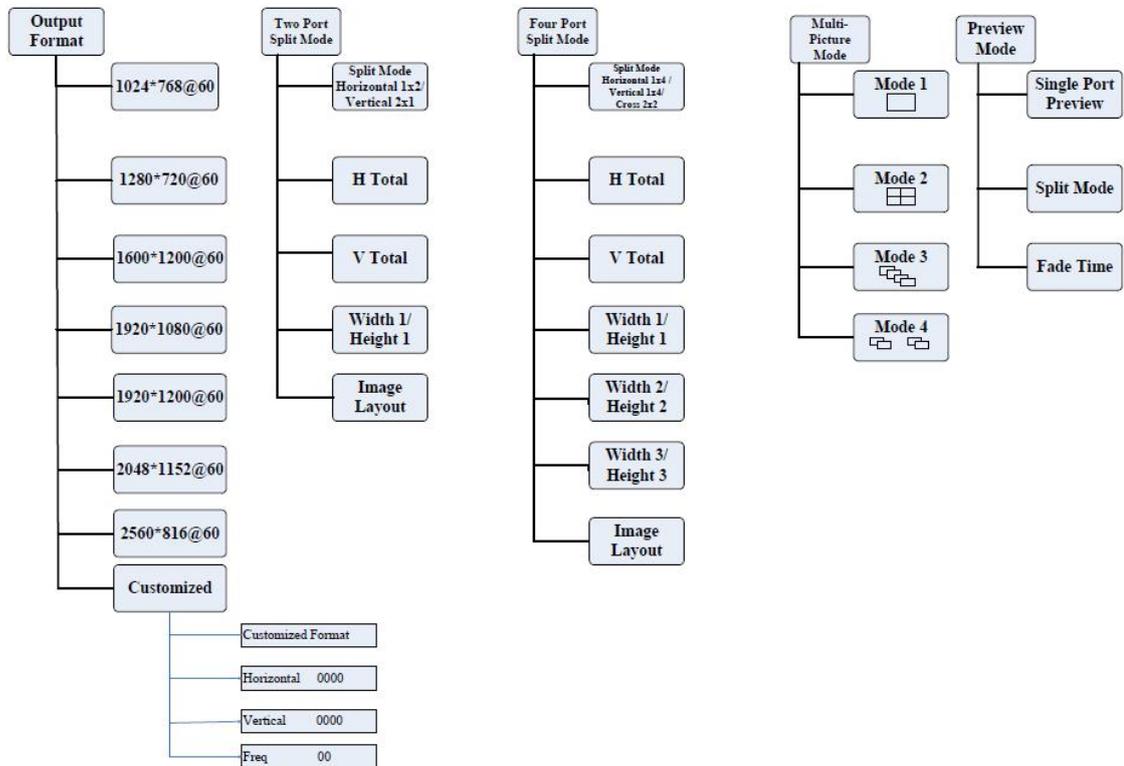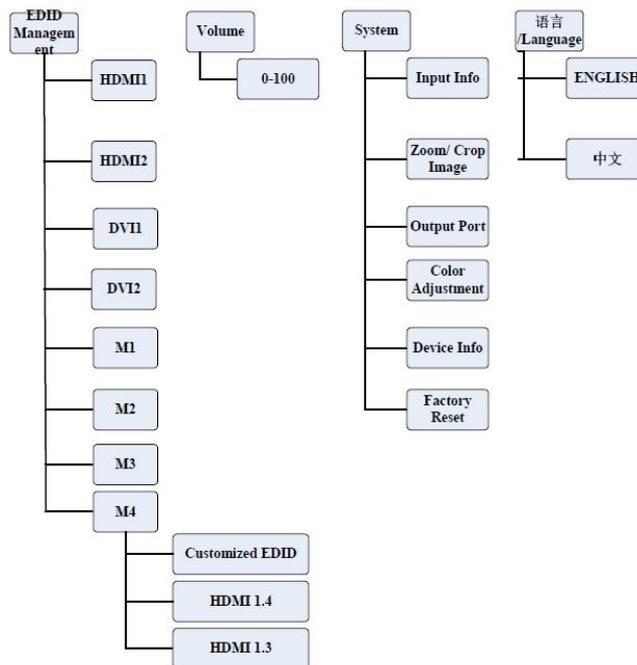
4.2 Output Resolution

VS2 default output resolution is 1920*1080@60Hz, if user would like to change to 1536*1536@60Hz, the steps are as follows:

1.Press MENU button to find the output resolution and press knob to confirm.

➔ output Format	》
Two Split	》
Four Split	》
Multi Picture	50
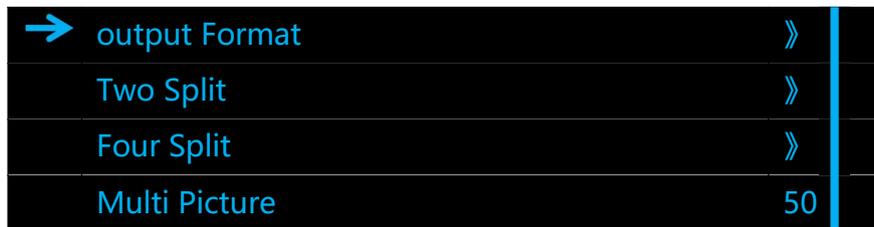
2.Rotate the knob to find "CUSTOMIZED" resolution.

| 1920*1200@60	Hz
2048*1152@60	Hz
2560*816@60	Hz
➔ Customized	Hz
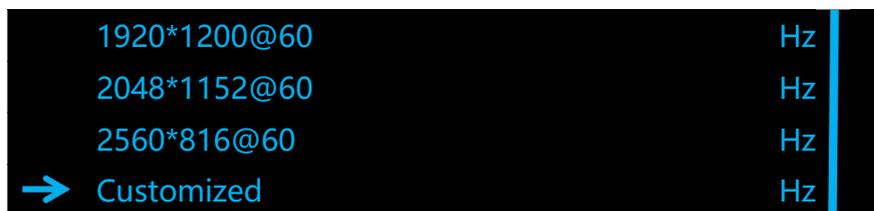
3.Click the knob to set the width 1536, height 1536 and frequency 60fps with numeric buttons and click the knob to confirm.

Customized Format		Hz
Width 1536		Hz
Height 1536		Hz
➔ Freq 60	[>]	Hz
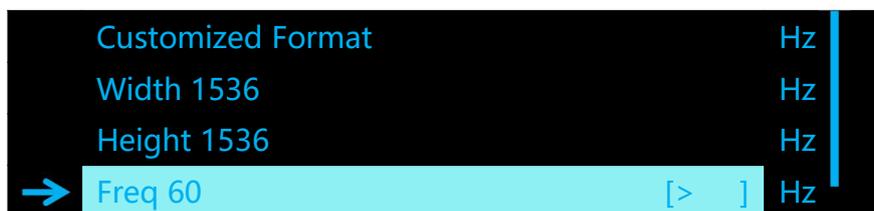
4.The setting is success after the arrow is disappear, press MENU and return to the previous menu to check if it was changed successfully.


```
1PA: HDMI1   1920 X 1080 @ 60

                                    [  ][  ][  ][ 1]

OUT: 1536 X 1536 @ 60
```
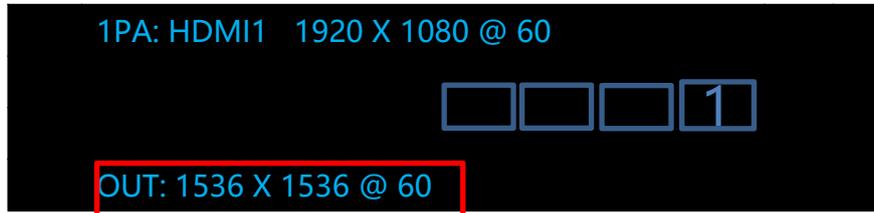
4.3 Two Port Split

Two Port Split: DVI1 & DVI2 outputs are for horizontal or vertical split, the DVI1 is for the left (horizontal) or the upper (vertical) screen and DVI2 is for the right (horizontal) or the bottom (vertical) screen.

Horizontal 1/2 Split:

If user has a screen with 3328 x 960 to make split, the left screen is 1792 x 960, the right screen is 1536 x 960

| DVI 1 | DVI 2 |
| 1792x960 | 1536x960 |
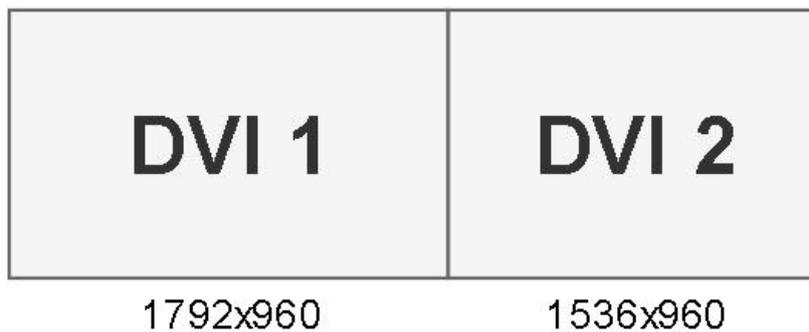
The steps are as follows:

1.Select split model: Press Menu and rotate the knob to enter to Two Port Split, select horizontal split:


```
        Output Format                »
  →     Two Split                     »
        Four Split                    »
        Multi Picture                 »
```
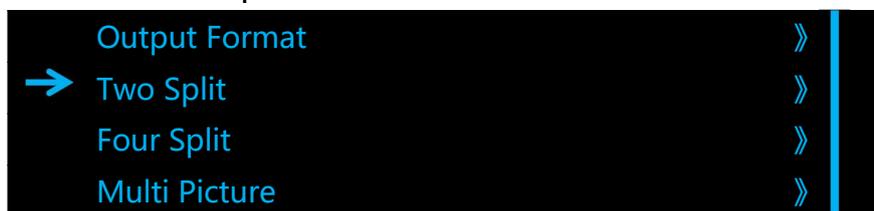
After the step 1 is done, change the screen parameter as follows: (When the width and height of sending card exceeds 1920 x 1080, user need to enter the resolution setting menu to customize the output resolution. Each Sending card resolution should within output resolution of processor.)

Set H total to be 3328

Set V total to be 960

Set the first display width to be 1792 by number button or rotation knob
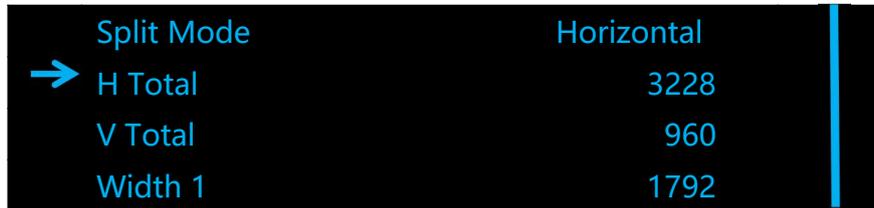
Split Mode	Horizontal
→ H Total	3228
V Total	960
Width 1	1792

Rotate the knob to image layout menu and select single image, PIP, PBP and three images layouts.

→ Image Layout
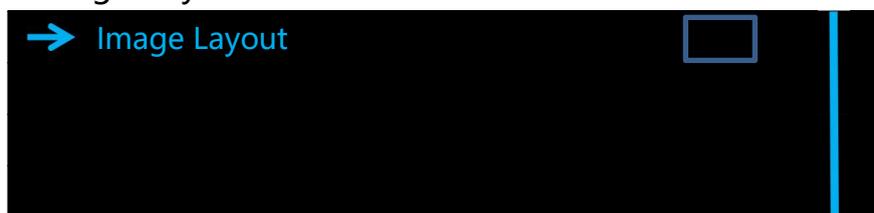
There is no need to set the second screen width, the device will calculate and save by itself, if user want to load the layouts, save the setting and then load the saved setting afterwards.

Vertical 1/2 Split:

If user has a screen with 1792 x 2112 to make vertical split, the upper one is 1792 x 1152, the bottom one is 1792 x 1152.

1792x1152

DVI 1

DVI 2

1792x960

The steps are as follows:

1. Select the split model: Press Menu and rotate the knob to enter to Two Port Split, select vertical split:

Output Format	》
→ Two Port Split	》
Multi Image	》
Preview Mode	》
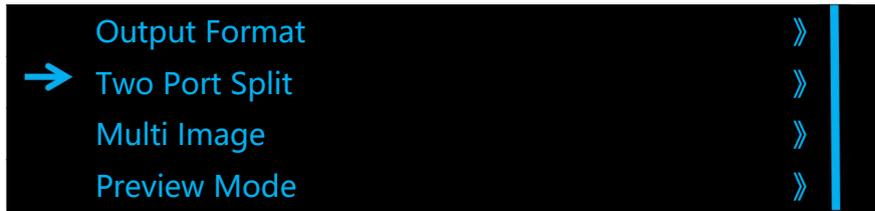
2.After the step 1 is done, change the screen parameter as follows:

Set H total to be 1792

Set V total to be 2112

Set the first display width to be 1152 by number button or rotation knob

Split Mode	Vertical
→ H Total	1792
V Total	2112
Height 1	1152

Rotate the knob to image layout menu and select single image, PIP, PBP and three images layouts

→ Image Layout	
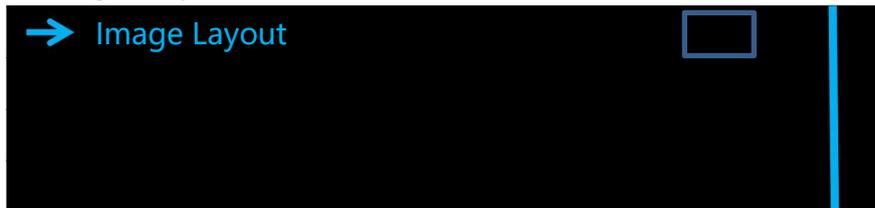
There is no need to set the second screen width, the device will calculate and save by itself, if user want to load the layouts, save the setting and then load the saved setting afterwards.

4.4 Four Port Split

Four Port Split: VS2 has 4 DVI outputs for 1x4 Horizontal Split, 4x1 Vertical Split and 2x2 Cross Split. With several image layout.

Horizontal 1x4 Split with 3 Windows Display

If user has a main screen with 3840x1152, the side screen is 640x960. Use Four Port Split Mode for project configuration.

The steps are as follows:

1. Set the Output Format as 2048x1152@60Hz.

2. Select the split model：Press Menu and rotate the knob to enter to Four Port Split, select horizontal 1x4 split:

Output Format		》
Two Port Split		》
→ Four Port Split		》
Multi Picture		》

3.After the step 2 is done, the screen parameter will be:

Split Mode	Horizontal
H Total	8192
V Total	1152
Width 1	2048

Width 2	2048
Width 3	2048
Image Layout	▢▢▢
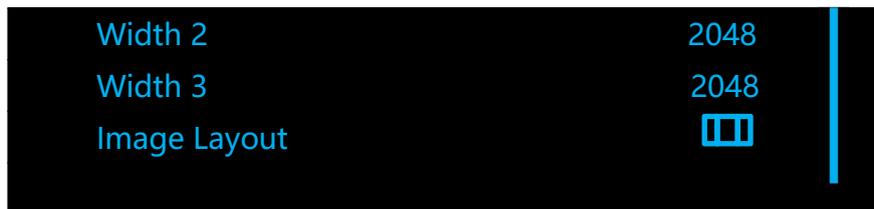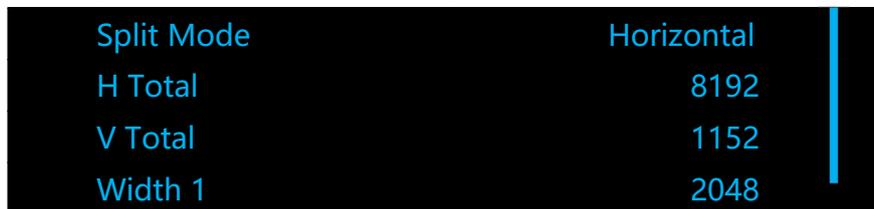
Set V total to be 1152.

Push Layer A and Scale the size as 3840x1152 for Main Screen.

Push Layer B and Scale the size as 640x960 for Left Side Screen.

Push Layer C and Scale the size as 640x960 for Right Side
 Screen.

→ Current Window	A
Width	3840
Height	1152
H Position	2048
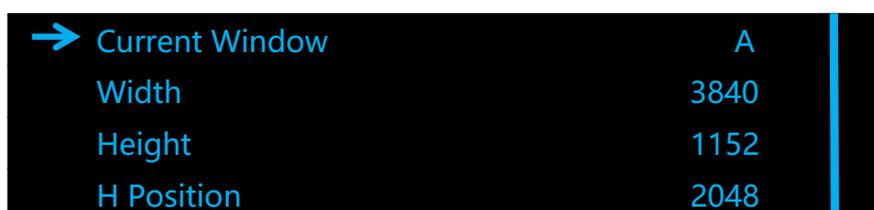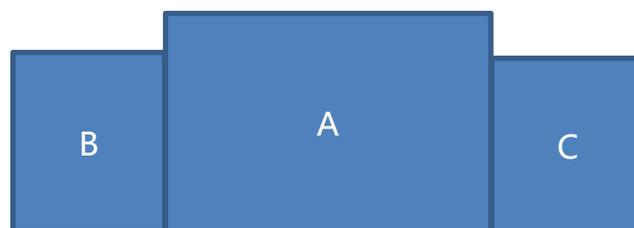
→ Current Window	B
Width	640
Height	960
H Position	0

→ Current Window	C
Width	640
Height	960
H Position	6144

4.4 Multi-layer

Multi-layer in single output

Model 1：Single image with single output, in this model, press the layer buttons A, B, C & D to add any layer, edit the size of layer and the change the signal source

Model 2：Four images in Cross, in this model, press layer buttons A,B,C & D to change the input source or close the image.

Model 3：Four images overlay, in this model, press layer buttons A,B,C & D to change the input source or close the image.

Model 4：Two images with single output, in this model, DVI1 and DVI2 outputs each support two layers to be edited and set.

Model 5：Support individual control for each DVI output. Each layer can be set in different source in different size and position.

If client would like to realize three images display from left to right side, the right and left keep the same, the left display is 480 x 1080, the right is 480 x 1080 and the middle one is 960 x 1080, the steps are as follows:
Rotate the knob to select the Model 1
Layer 1 is lighting up at present and we add layer B and layer C to be three images
1. Configure the layer B width and height to be 480 x 1080: press B button to change the width and height and then press the relative signal

input DVI1 as the source of layer B.

IMAGE	B 》
→ WIDTH	480 》
HEIGHT	1080 》
H POSITION	0 》

V POSITION	0 》
	》
	》
	》

2.After step 1 is done, we configure the layer A width and height to be 960 x 1080, move the layer A horizontal position to be 480 and the vertical position keep 0, press the relative input HDMI1 as the source of layer A.

IMAGE	A 》
→ WIDTH	960 》
HEIGHT	1080 》
H POSITION	480 》

After step 2 is done, we configure the layer C width and height to be 480 x 1080, move the layer C horizontal position to be1440 and vertical position keep 0, press the relative input DVI1 as the source of the layer C.

IMAGE	C	》
→ WIDTH	480	》
HEIGHT	1080	》
H POSITION	1440	》

After these steps are done, press "SAVE" button to save in the number channel from 0-9, user can load the relative setting by press "LOAD" button.

4.5 Preview Mode

Single Port Preview: DVI2 is for preview output and DVI1 is for program output, the signal input will be edited in preview output and switch to program output after pressing "TAKE" button.
Quick Layout

Single image switching
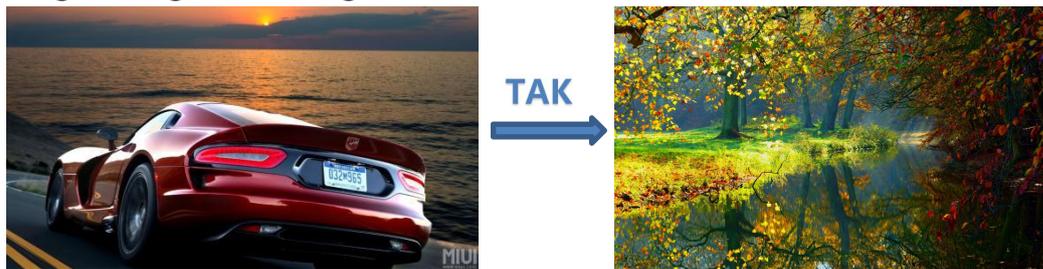
Single image switch to PIP/PBP

Single image switch to three images

PIP switch

User also are able to add and edit layer A,B,C & D and save the settings in advance, in the future, user can load the settings to the preview output by "LOAD" button and then switch the setting to program output by "TAKE" button.

Split Mode：DVI 3 & 4 is for Preview. DVI 1 & 2 is for Program. Support two port Horizontal or Vertical split. The signal input will be edited in preview output and switch to program output after pressing "TAKE" button.
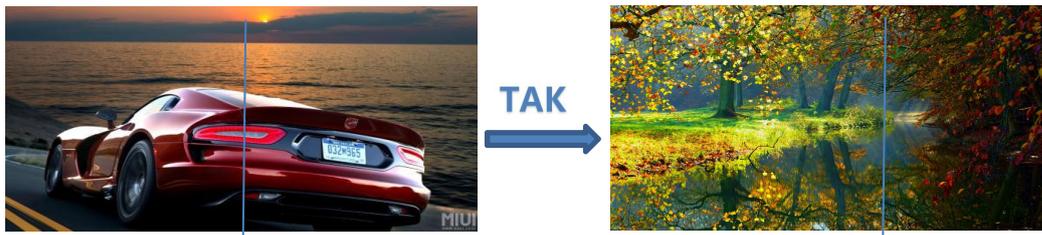
4.6 EDID Management

If there is a screen with 3072 x 960 pixel pitches and need to be pixel by pixel display, but the PC standard input resolution is 3840 x 1080, how to set the output resolution to be 3072*960 ? The L3 EDID management can work this, the steps are as follows:

1.Press menu button and rotate the knob to EDID menu

→	EDID MANAGEMENT	》
	VOLUME	》
	SYSTEM	》
	语言/LANGUAGE	》

2.Press the knob and enter to input source need to be changed in sub-menu of EDID, the input listed can be changed, we will use HDMI2.0 as a example.

→	HDMI1	》
	HDMI2	》
	DVI1	》
	DVI2	》

M1	》
M2	》
M3	》
M4	》
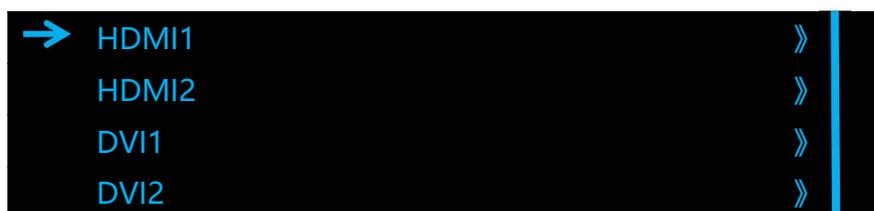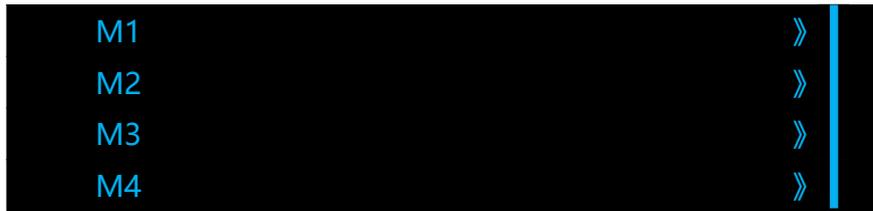
3. Select HDMI1 and press the knob to confirm, we can choose HDMI1.4(4K30Hz) or HDMI1.3(2K), but we will use the customized resolution to change the EDID.

→ CUSTOMIZED	》
EDID HDMI 1.4	》
EDID HDMI 1.3	》
	》

4.After step 3 is done, rotate the knob to input and change the EDID

|		
CUSTOMIZE EDID	HDMI 1.4	》
WIDTH 3072		》
HEIGHT 960		》
→ 60		》

5.After step 4, return to the menu and overview the status. (pls note that some PC will work successfully after remove and re-connect the input)

1PA HDMI1   3072 X 960 @ 60

OUT: 1536 X 960 @ 60

4.7 System

Input Information: View the input resolution information and adjust the input timing. If there is an input offset, you can change the adjustment mode to manual, and then adjust the horizontal or vertical offset.

→ INPUT RESOLUTION: 1920x1080@60	
ADJUST	MANUAL
H ADJUST	192
W ADJUST	43

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ZOOM：Cut off the image size.

→	ZOOM UP	0
	ZOOM DOWN	0
	ZOOM UP & DOWN	0
	ZOOM FROM LEFT	0

	ZOOM FROM RIGHT	0
	ZOOM LEFT & RIGHT	0
	ZOOM IN MIDDLE	0
→	RESET	0

Output Port：change DVI1 & DVI2 output content

→	IMAGE	A
	TYPE	DVI
	BIT WIDTH	10bit
	RANGE	YUV

Image quality adjustment: adjust screen brightness, color temperature and GAMMA

→	CONTRAST	100
	BRIGHTNESS	100
	COLOR EFFECT	STANDARD
	COLOR TEMPERATURE	Default

→	RED	127
	GREEN	142
	BLUE	132
	HUE	255

→	SATURATION	100
	SHARPNESS	10
	GAMMA	1.8

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```
        RESET
```

System information：View the information of version

```
        SERIES NO.   0031
   →    SOFTWARE    》
        HARDWARE        》
        OLED BRIGHTNESS  12
```

4.8 Factory reset：Clear all Settings and restore the device

4.9 Language: select equipment in Chinese and English

4.10 Volume: adjust the volume from 0 to 100