



**LINK-MI**<sup>®</sup>  
LINK-MULTIMEDIA INTERFACE

**LM-TV09S**

**LM-TV Serial Irregular  
Video Wall controller**

User Manual

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# 1<sup>th</sup> Device installation

## 1, the installation instructions

In order to save your precious time, this manual does not introduce common sense of common use of electrical appliances, please follow the common sense of common electrical appliances;

Before using the device, please read the operating instructions carefully so that you can quickly become familiar with the commissioning and use of the device.

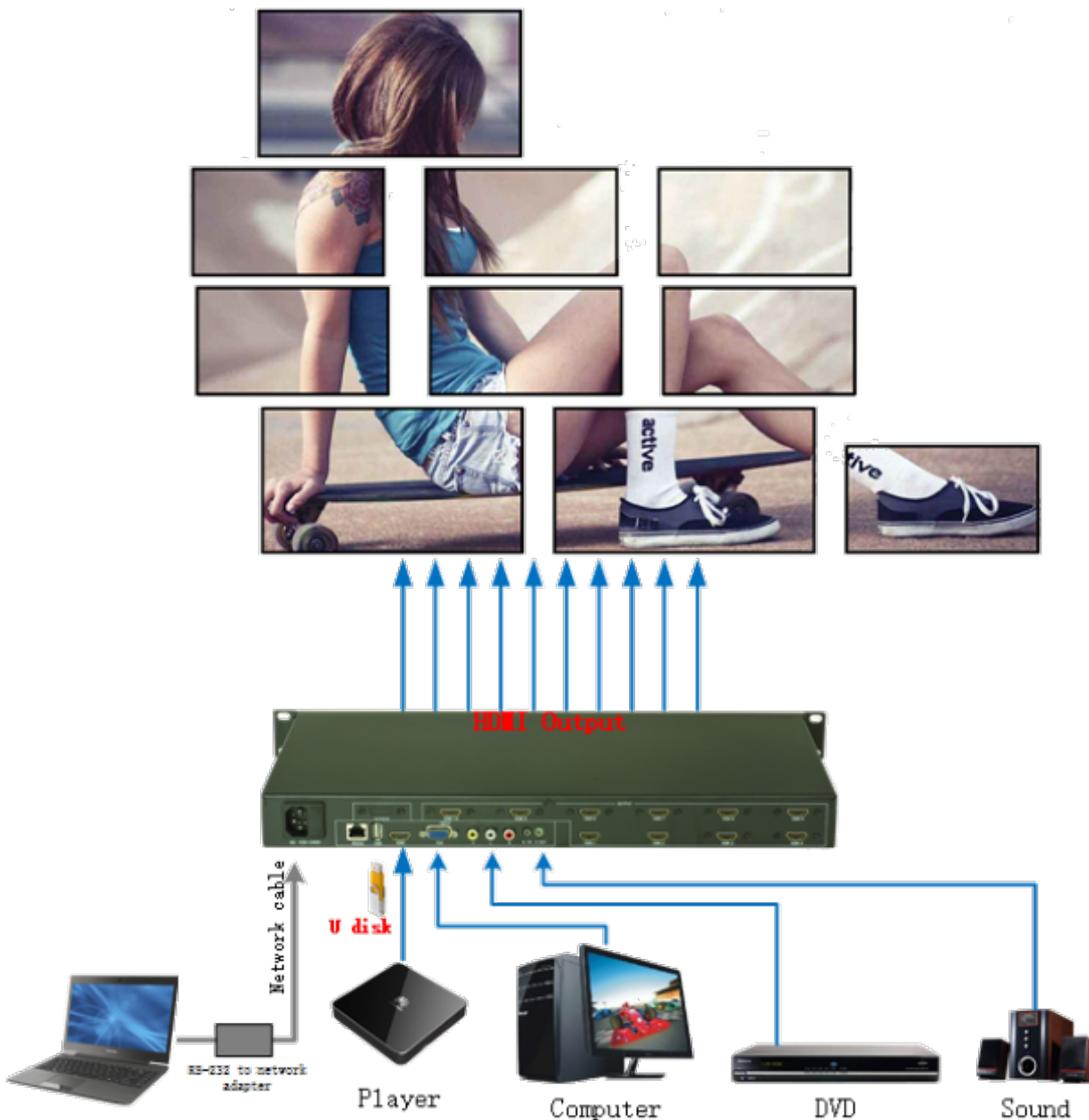
## 2, the installation steps

1. Connect the HDMI output of the splicing processor to the HDMI input port of the liquid crystal display unit, and each display unit can be connected to any HDMI output port of the splicing processor;

2. Connect the signal source to be displayed to any one of the HDMI, VGA, and BNC interfaces, or insert the U disk to play the video or picture in the U disk;

3. For the first time, set the special-shaped splicing processor. It needs to be connected to the RJ-45 serial port of the manufacturer through the serial cable, and then connected to the RJ-45 socket of the splicing processor through the network cable.

The installation diagram is as follows:



### 3, power on

After the above cables are connected, plug in the 100-240V AC power supply, turn on the power switch of the device, the power indicator light is red, and the device is in working state;

## 2<sup>th</sup>, Product Description

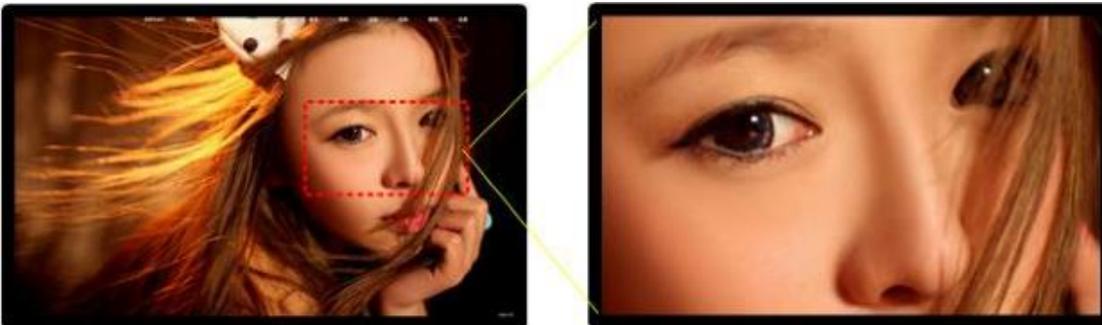
The LM-TV09S is a very flexible shaped splicing processor. It can make a creative irregular splicing for horizontal screen. The biggest feature of the product is that it can freely capture any part of the input signal to a single LCD unit through remote control.

The product supports 1 HDMI, 1 VGA, 1 USB, 1 VIDEO signal input, and supports customized multiple HDMI signal output. The input and output resolution up to 1920x1080@60HZ.

## 3<sup>th</sup>, Main Functions

### 2.1, Grab an arbitrary image

The remote control can be used to zoom in on any part of the input signal to the LCD screen display, as shown below:



### 2.2, Signal inputs

The device is equipped with 1 channel HDMI, 1 channel VGA, 1 channel VIDEO, and 1 channel USB signal input. Users can select the input signal source according to their needs.

### 2.3, Customizable multi-output on one machine

A single machine can be customized to multiple outputs, each output is intercepted according to the different arrangement of the liquid crystal screen to display corresponding parts to the corresponding liquid crystal unit to form a personalized shaped mosaic, that is, irregular splicing (the screen can be placed discretionarily, at any interval position, and the size of the screen can be inconsistent) . As shown below:



## 2.4, Vertical or Horizontal irregular splicing

Support irregular splicing for both vertical or horizontal when using a vertical screen rotator.



## 2.5, Multi-angle shaped stitching

Adding an arbitrary angle rotator(in developing) to the front end of the LM-TV09S profiled splicer can achieve more irregular splicing (multi-angle rotation profile splicing), such as tilting 45 degree / 30 degree splicing. As shown in the following figure:



## 2.6, Mirror Function

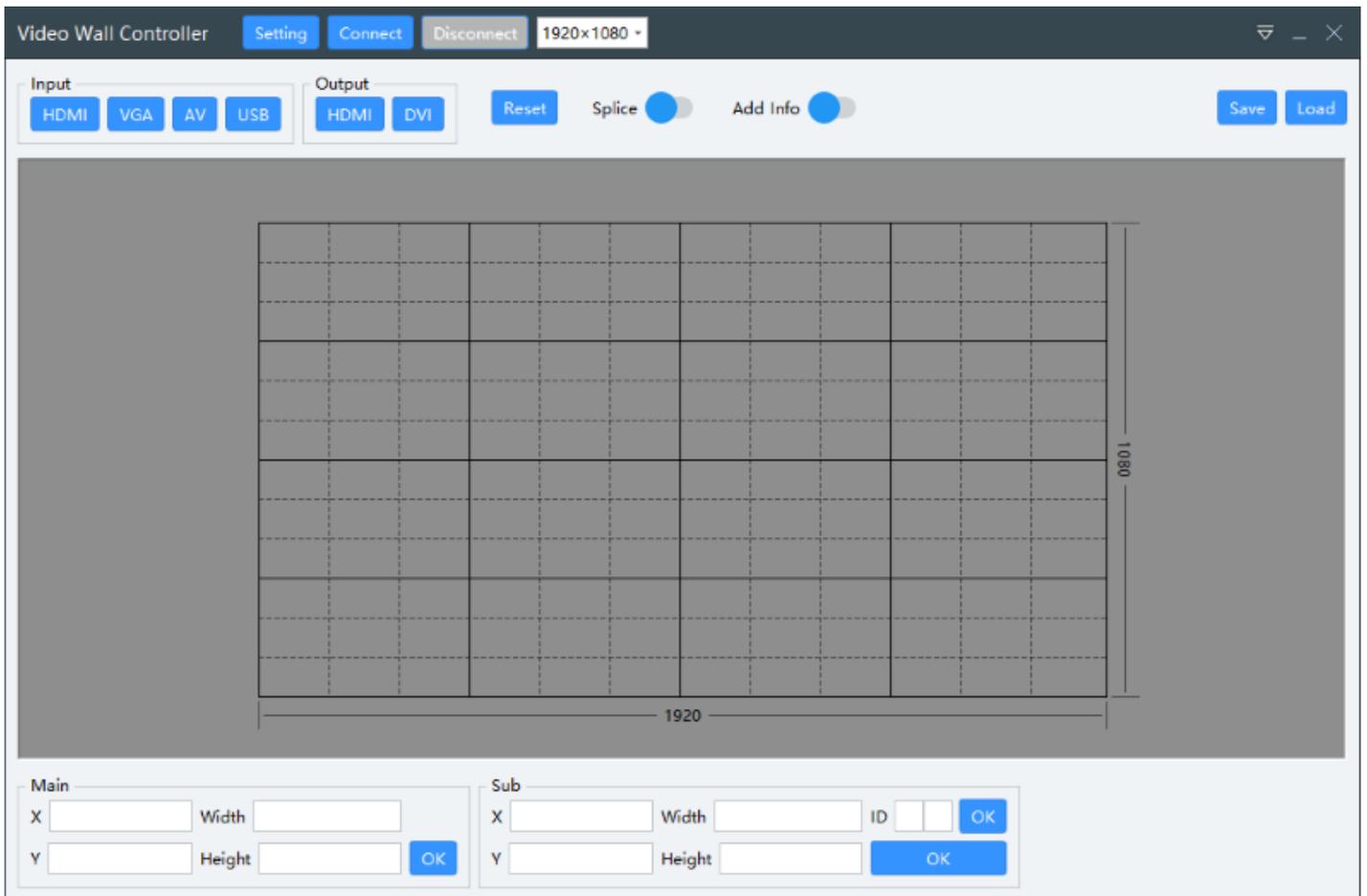
LM-TV09S shaped splicer can freely mirror left and right for each LCD screen, mirror up and down you, and flip 180 degrees, so as to achieve personalized mirror stitching, as shown in the figure:



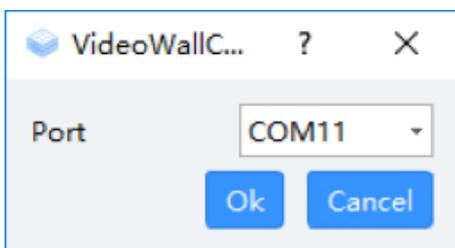
# 4<sup>th</sup> Software Communication Settings

For the first time, the alien splicing processor needs to be debugged by software according to the actual arrangement of the LCD screen. Before the debugging, the control software and the device need to communicate normally. The following is the communication setting mode:

1. Open the Software folder inside the CD and copy it to the computer hard disk, open the VideoWallcontrol.exe file inside, and then pop up the following interface;



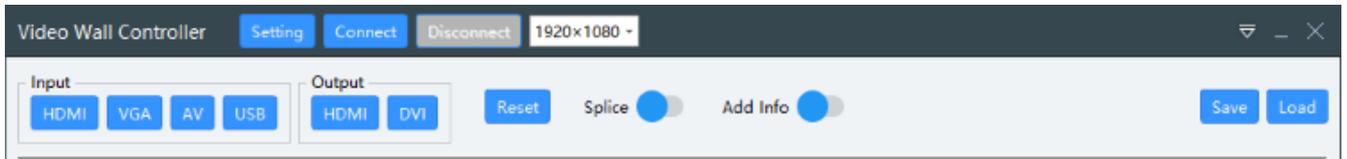
2. Click the Setting button at the top of the interface to pop up the serial port. The port is as follows:



3. After selecting the computer com port connected to the device, click OK, and then click Connect at the top of the interface, the computer can be controlled by the alien splicing processor.

## 3<sup>th</sup> Software Key Functions

For the first operation, you need to be familiar with the function of each button of the control software. The following methods are described:



**Setting:** set the serial port number

**Connect:** Connect the serial port

**Disconnect:** Disconnect the serial port

**1920x1080:** Set the output resolution

**Save:** Save the settings of the settings

**Load:** call the saved setup parameters

∇: Language settings

**Buttons in the Input group:**

**HDMI:** One button to switch to HDMI signal input;

**VGA:** One button to switch to VGA signal input;

**AV:** One-touch switch to composite video signal input;

**USB:** Switch to USB video

**Output group button**

**HDMI:** Switch to HDMI mode output;

**DVI:** Switch to DVI mode output;

**Reset:** splicing processor reset;

**Splice:** splicing off / on

**Add info:** ID information off / on



**Main part**

**X:** Enter the horizontal X starting point of the image;

**Y:** Enter the vertical Y starting point of the image;

**Width:** scales the width of the input image;

**Height:** scales the height value of the input image;

**Sub: Part**

**X:** the horizontal X starting point of the captured image;

**Y:** the longitudinal Y starting point of the captured image;

**Width:** the width of the captured image;

**Height:** the height of the captured image;

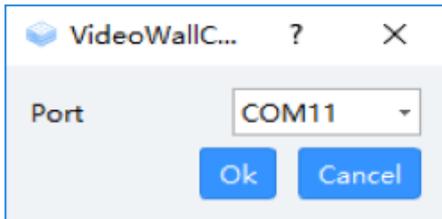
**ID:** ID number of the desired control display unit;

# 5<sup>th</sup> image Debugging

Note: This description describes the special-shaped splicing debugging method, but because the special-shaped splicing is different from the regular splicing, it takes a certain time in the actual operation to fine-tune the image to achieve the best effect of the splicing. The following is an example of the splicing operation steps:

## 1. Connecting serial port

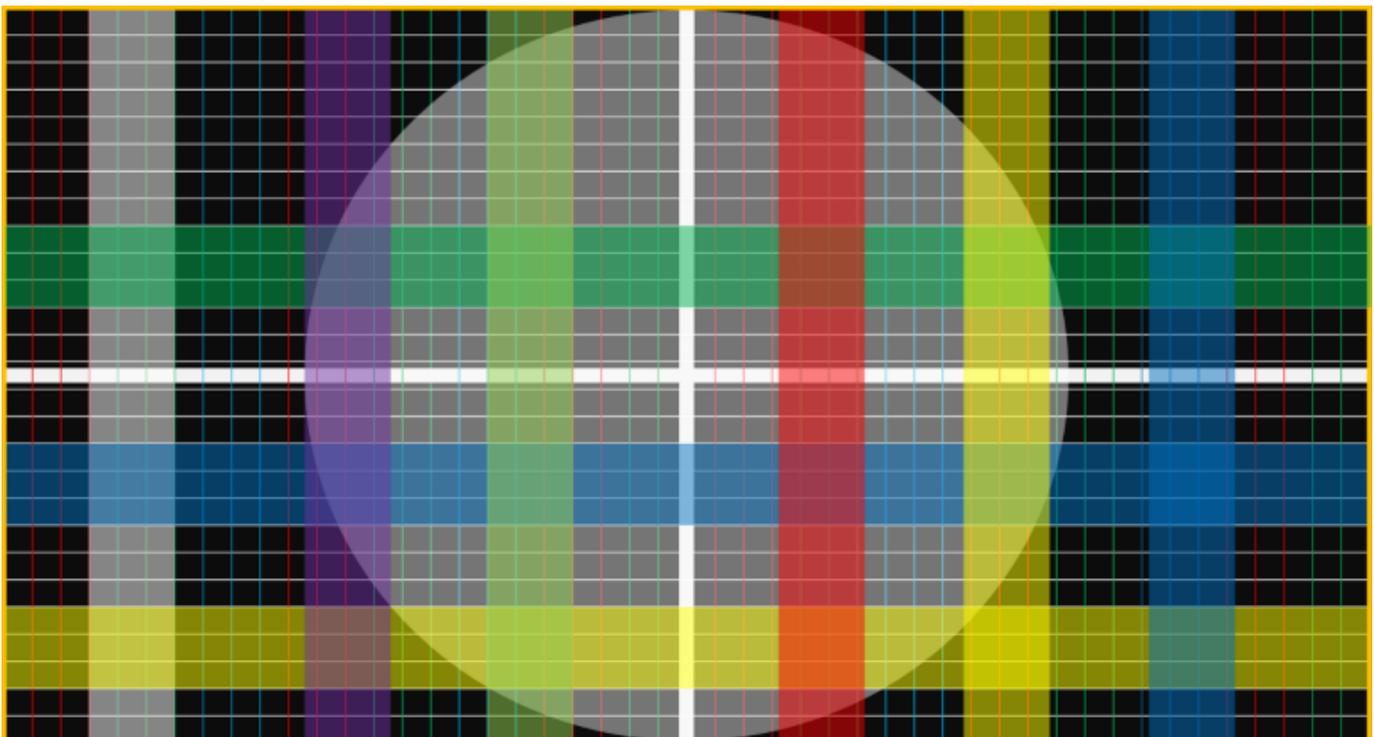
1.1 Click the Setting button at the top of the interface to pop up the serial port settings port as shown below:



1.2 Select the computer com port number connected to the device and click OK, then click Connect at the top of the interface, the computer can be controlled by the alien splicing processor.

## 2. Input an image signal to the screen splicing processor, preferably using a notebook to copy the output, so that the image coordinate position can be compared and referenced during the debugging process (you can use the grid image provided by the manufacturer to better help debug the screen);

2.1 First insert the U disk provided by the manufacturer. The method of opening is to press the UA4 button of the remote control or the USB button of the chassis. Find the picture through the up, down, left and right of the remote control, click OK to select the picture, press the PLAY button  to play the picture, press the pause again.



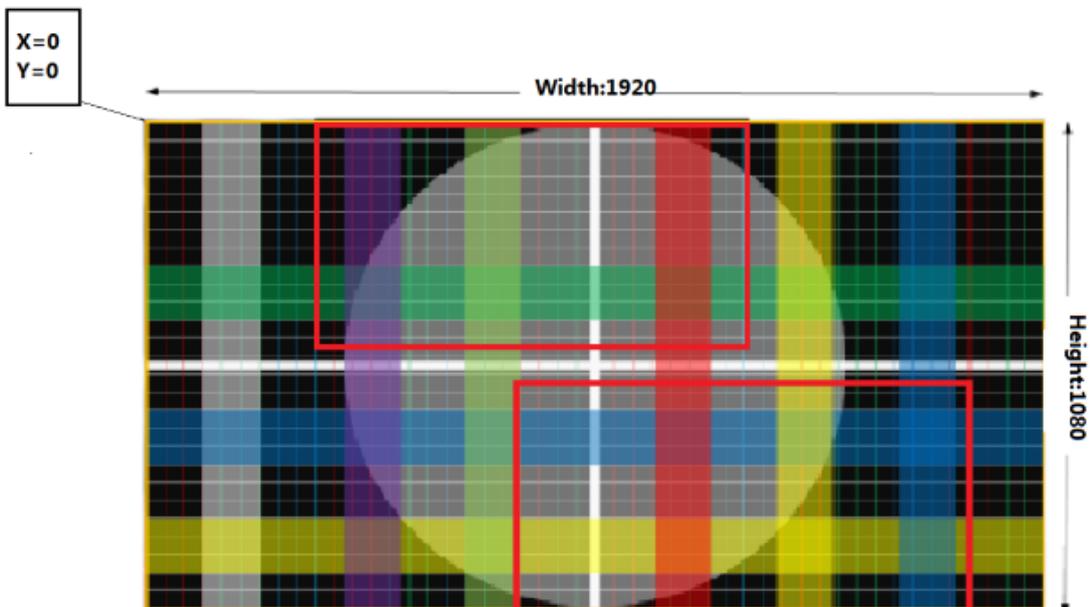
3. To complete the debugging of one of the following special-shaped 2 stitching as an example: (This image is HDMI signal input, the debug image is the above USB input as an example)



5. Define the signal input to the splicing processor as an image with a length of 1920 pixels and a height of 1080 pixels. The upper left corner is the starting point 0 of the horizontal X and the vertical Y, as shown in the following figure:



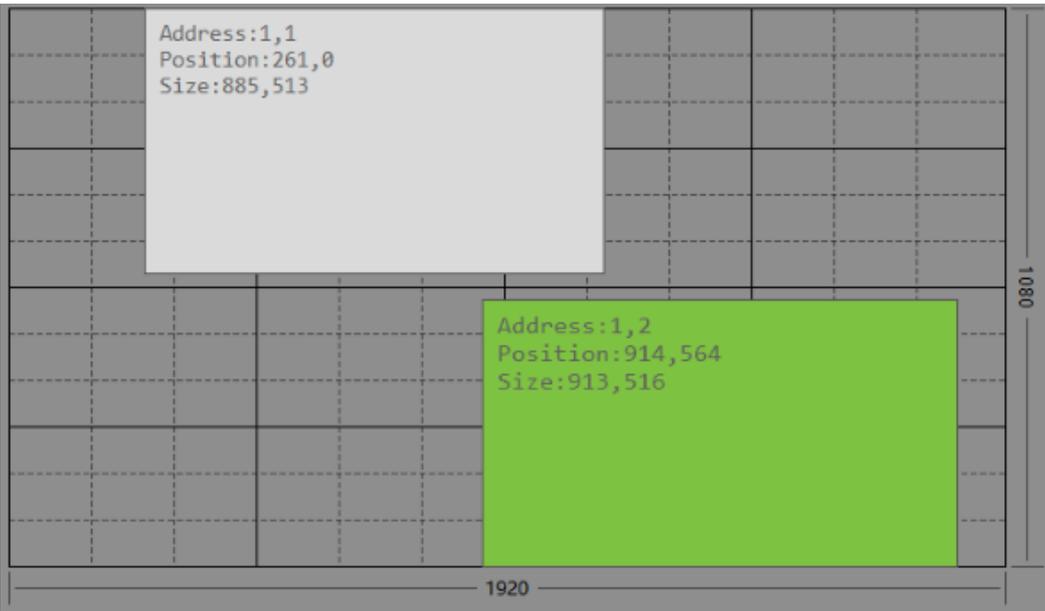
3.2, Estimate the starting point of the coordinates and the width and height of the image as follows:



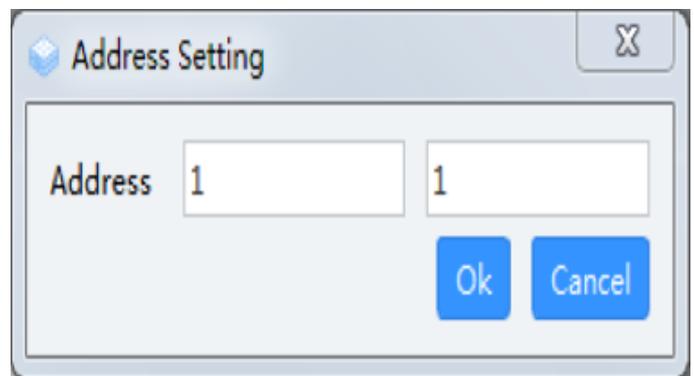
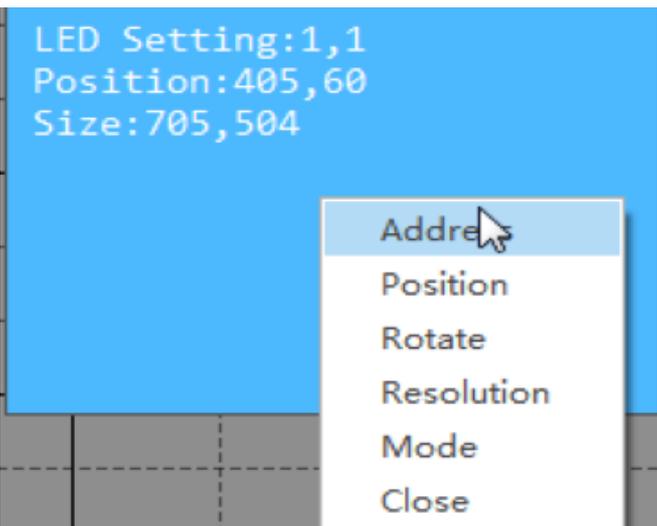
3.3. After opening the control software to connect to the serial port, set Add info to ON state. Each display unit displays the corresponding address and other information as follows:



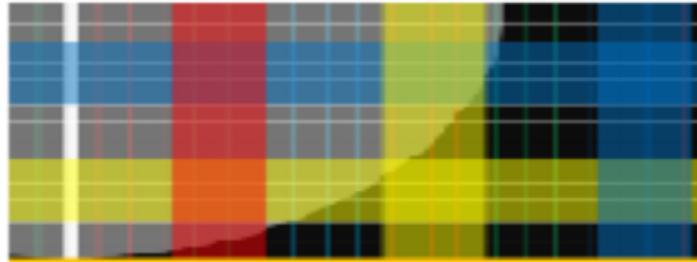
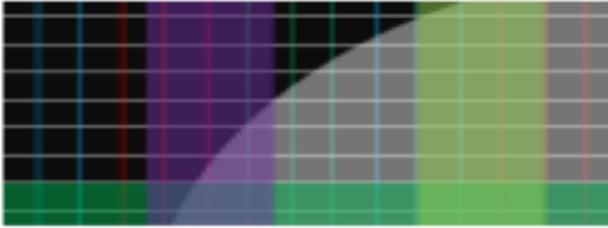
3.4. Set Splice to the on state, hold down the left mouse button and drag inside the software interface to create a window similar to the estimated coordinates and length and width, as shown below:



3.5, Use the right mouse button to click the dragged window, the following interface pops up, and the ID address is modified to the ID corresponding to the display unit in the interface. Each display unit needs to be configured with the corresponding address to control.(The following is a description of each button on the popup interface).

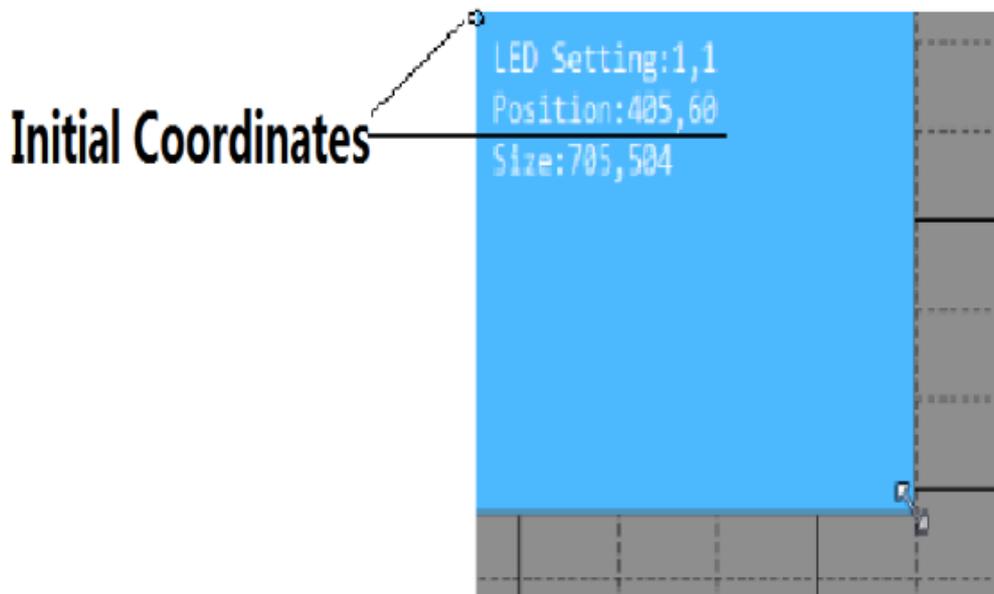


The display unit now looks like the following image:



3.6, The size and position of the window can be adjusted by the mouse to adjust the image content displayed by each display unit in the alien stitching. At the same time, the coordinates and the length and width can be precisely adjusted by Position. When the left mouse button is selected, the arrow keys of the keyboard can be realized by the arrow keys of the keyboard. The overall movement of the window controls the display unit.

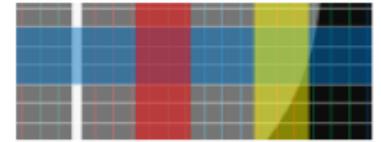
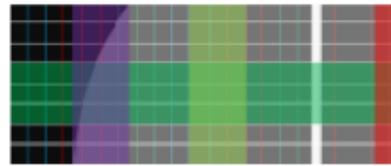
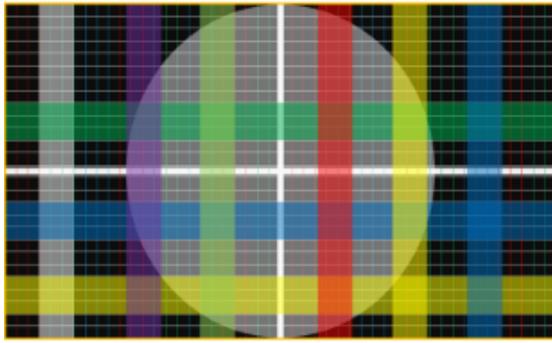
3. 6. 1 The size of the image in the display unit can be controlled by the mouse stretching window, and the edge of the window is selected by the mouse, as shown in the figure:



Compared with the original grid image, after continuously adjusting the starting coordinates and size of the window, each small grid of the grid image of the two display units is adjusted into a square of the same size, and the display unit is as follows:

Original grid image:

Display unit:



3. 6. 2 Through the Position to precisely adjust the coordinates and length, width and left click on the selected window, through the keyboard's direction key to achieve the overall movement of the window to control the display unit, these two methods, can be based on the previous step to eliminate the artificial stretching window Brought a subtle gap.

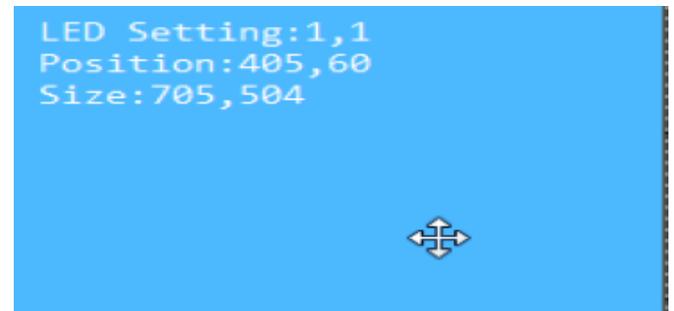
**Position Setting** ✕

Start X

Start Y

Width

Height

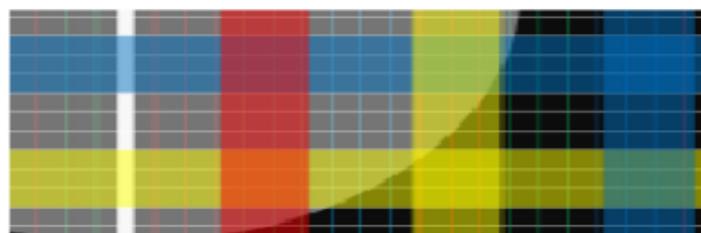
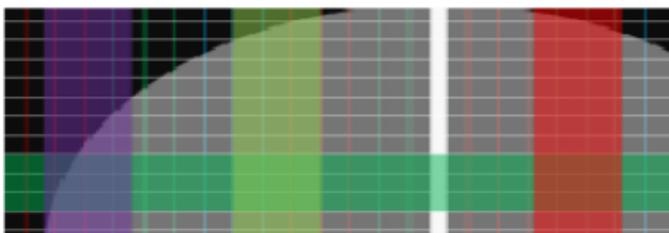


**Note: When the length and width of the window are exceeded, the display unit will be displayed in full screen. At this time, drag the window to move back and forth with the mouse.**

3. 6. 3 Each display unit can be precisely adjusted by inputting numbers. The debugging principle is similar to the above, as shown below:

<b>Main</b>				<b>Sub</b>			
X	<input type="text" value="1007"/>	Width	<input type="text" value="913"/>	X	<input type="text" value="273"/>	Width	<input type="text" value="1059"/>
Y	<input type="text" value="504"/>	Height	<input type="text" value="516"/>	Y	<input type="text" value="285"/>	Height	<input type="text" value="513"/>
			<input type="button" value="OK"/>	ID	<input type="text" value="2"/>	<input type="text" value="1"/>	<input type="button" value="OK"/>
							<input type="button" value="OK"/>

After many steps, make the size of each small square consistent, horizontal and vertical alignment (as shown in the red stripes below). Click the Save button of the control software to save the setting. The parameters of this setting can be called by the Load button next time. Figure:



Convert the input signal to an HDMI input:



3.7, Mirror adjustment, click on Rotate to mirror the image of the LCD unit to the left and right, mirror up and down, and rotate 180 degrees to adjust.

Mirroring left and right:



Mirror up and down:



Rotate 180 degrees:



3.8, Debug the output resolution of the corresponding display unit via Resolution.

3.9, Use the Mode button to set the output to HDMI or DVI.

Other multi-screen shaped stitching is used as an example.

# 6<sup>th</sup> Buttons and Remote Control Instructions

Note: Using the buttons and the remote control to set up the profile stitching will become very complicated. Please use the control software for debugging. This manual will only briefly explain the remote control and chassis buttons.

## 1, chassis button function description



**Switch:** splicing on/off;

**MENU:** menu;

**UP, DOWN, LEFT, RIGHT:** up, down, left, and right arrow keys;

**HDMI:** One button to switch to HDMI input;

**VGA:** One button to switch to VGA input;

**VIDEO:** One button to switch to composite video input;

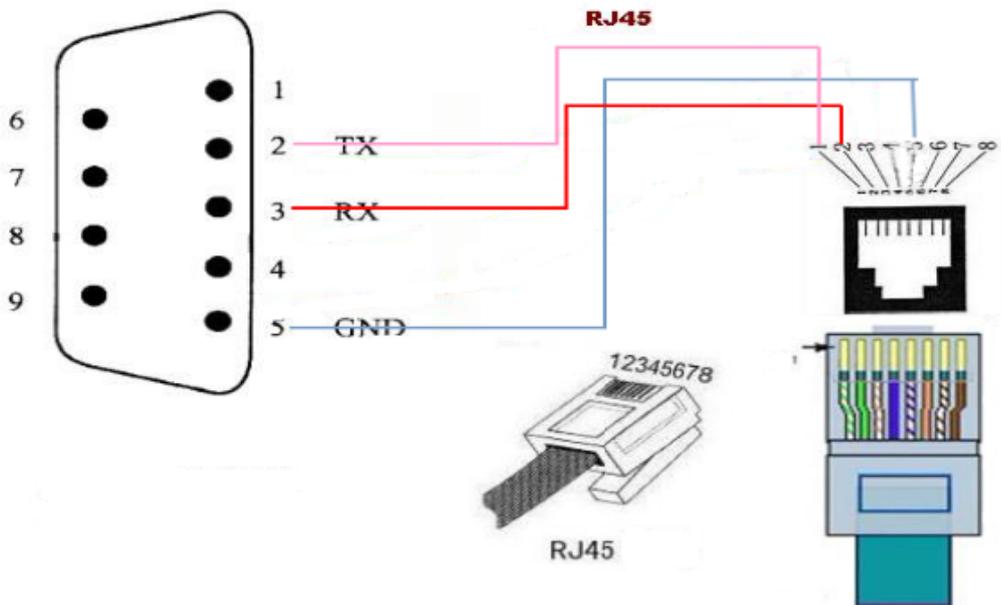
**USB:** Switch to USB playback with one button;

## 2. remote control button description



# 7<sup>th</sup> Serial Port Control Code

1, the product is controlled by RS-232 serial port, the following is the definition of device RJ-45 carrier TX, RX, grounding:



2. In addition to using the control software to control the device, the user can also control the device by issuing some commands to the device through the central control. The following information is related to the control code:

(1) Baud rate: 115200Bps

(2) Data format: 0Xff, 0Xf7, 0x59, cmd1, cmd2.....cmd10, PARITY A total of 14 bytes

(3) Boot code: 0Xff, 0Xf7, 0x59;

(4) Serial port command list:

**Switch AV signals:** 0Xff, 0Xf7, 0x59, 0x00, 0x30, 0x00, 0x7f

**Switch VGA signal:** 0Xff, 0Xf7, 0x59, 0x00, 0x31, 0x00, 0x80

**Switch HDMI signals:** 0Xff, 0Xf7, 0x59, 0x00, 0x32, 0x00, 0x81

**Switch USB signal:** 0Xff, 0Xf7, 0x59, 0x00, 0x33, 0x00, 0x82

**Switch HDMI output to 1080P:** 0Xff, 0Xf7, 0x59, 0x00, 0x34, 0x00, 0x83

**Switch HDMI output to 720P:** 0Xff, 0Xf7, 0x59, 0x00, 0x35, 0x00, 0x84

**Switch HDMI output to 1024x768:** 0Xff, 0Xf7, 0x59, 0x00, 0x3b, 0x00, 0x8a

**Open stitching mode:** 0Xff, 0Xf7, 0x59, 0x00, 0x36, 0x00, 0x85

**Close stitching mode:** 0Xff, 0Xf7, 0x59, 0x00, 0x37, 0x00, 0x86

**Reset data:** 0Xff, 0Xf7, 0x59, 0x00, 0x44, 0x00, 0x93

**Open profile stitching:** 0Xff, 0Xf7, 0x59, 0x00, 0x1d, 0x00, 0x6c

**Close the shaped stitching:** 0Xff, 0Xf7, 0x59, 0x00, 0x1e, 0x00, 0x6d

**Set the output to HDMI:** 0Xff, 0Xf7, 0x59, 0x00, 0x3D, 0x00, 0x8c

**Set the output to DVI:** 0Xff, 0Xf7, 0x59, 0x00, 0x3E, 0x00, 0x8d

**Display sub-board address and profile splicing information:** 0Xff, 0Xf7, 0x59, 0x00, 0x3c, 0x00, 0x8b

**Turn off the on-screen display information:** 0Xff, 0Xf7, 0x59, 0x00, 0x21, 0x00, 0x70

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