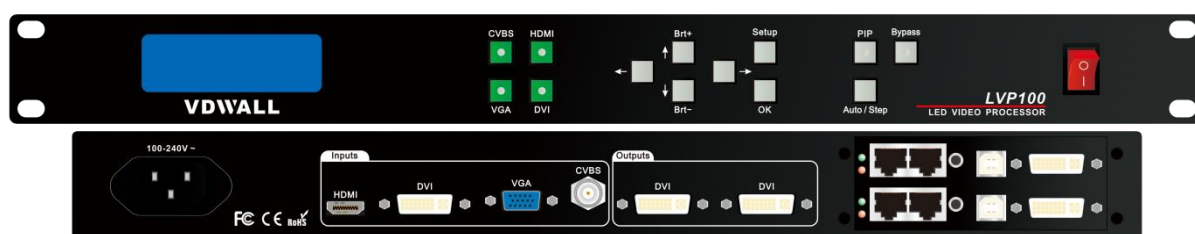


LVP100

LED HD Video Processor

USER MANUAL V1.0



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Chapter 1: Safety precautions



Danger

There exists high voltage in the processor, in order to prevent any unexpected hazard, please do not open the cover of the device unless you are a maintenance.



Warning

1. This device shall not encounter water sprinkle or splash, please do not place anything containing water on this device;
2. Keep this device away from any fire source to prevent fire;
3. If this device gives out any strange noise, smoke or smell, please unplug the power cord from receptacle immediately, and contract local dealer;
- 4. Signal cables are hot swappable.**



Caution

1. Please thoroughly read this manual before using this device, and keep it well for future use;
2. Please pull the power plug out of receptacle while lighting or you are not going to use the device for a long time;
3. Nobody other than professional technicians can operate the device, unless they have been appropriately trained or under guidance of technicians;
4. Please do not fill in anything in the vent of the device in order to prevent equipment damage or electric shock;
5. Do not place the device near water or anywhere damp;
6. Do not place the device near any radiator or anywhere under high temperature;
7. Please handle and keep them properly to prevent any rupture or damage of power cords;
8. Please immediately unplug power cord and have the device repaired, when:
 - ① Liquid splashes to the device;
 - ② The device is dropped down or cabinet is damaged;
 - ③ Obvious malpractice is found or performance degrades.

Chapter 2: Packing list

Please unpack the product carefully, then check whether all the following things are included in the package.

If anything is missing, please contact the dealer.

Standard accessories

The accessories supplied with this LED Video Processor may differ from the figures on the User's Manual, but they are applicable for the regions where you live. (LED sending card is optional)

	
1.5m power cord * 1	1.5m DVI cable * 1
	
User manual * 1	Operation CD * 1
	
BNC-RCA adapter * 2	

Chapter 3: Hardware connection

3.1 Diagram of signal ports on rear panel



Pic 3-1 Diagram of signal ports on rear panel

- ① Video input port
- ② DVI output port
- ③ RS232 interface, optional interface
- ④ Audio port

3.2 Ports description

3.2.1 Inputs

LVP100 LVP100 supports 8 video input signals as follows:

Ports	Description
CVBS	1 channel of Composite video input (PAL/ NTSC)
VGA	1 channel of PC analog signal input
DVI	1 channel of DVI digital input
HDMI	1 channel of HDMI digital inputs (HDMI 1.3)

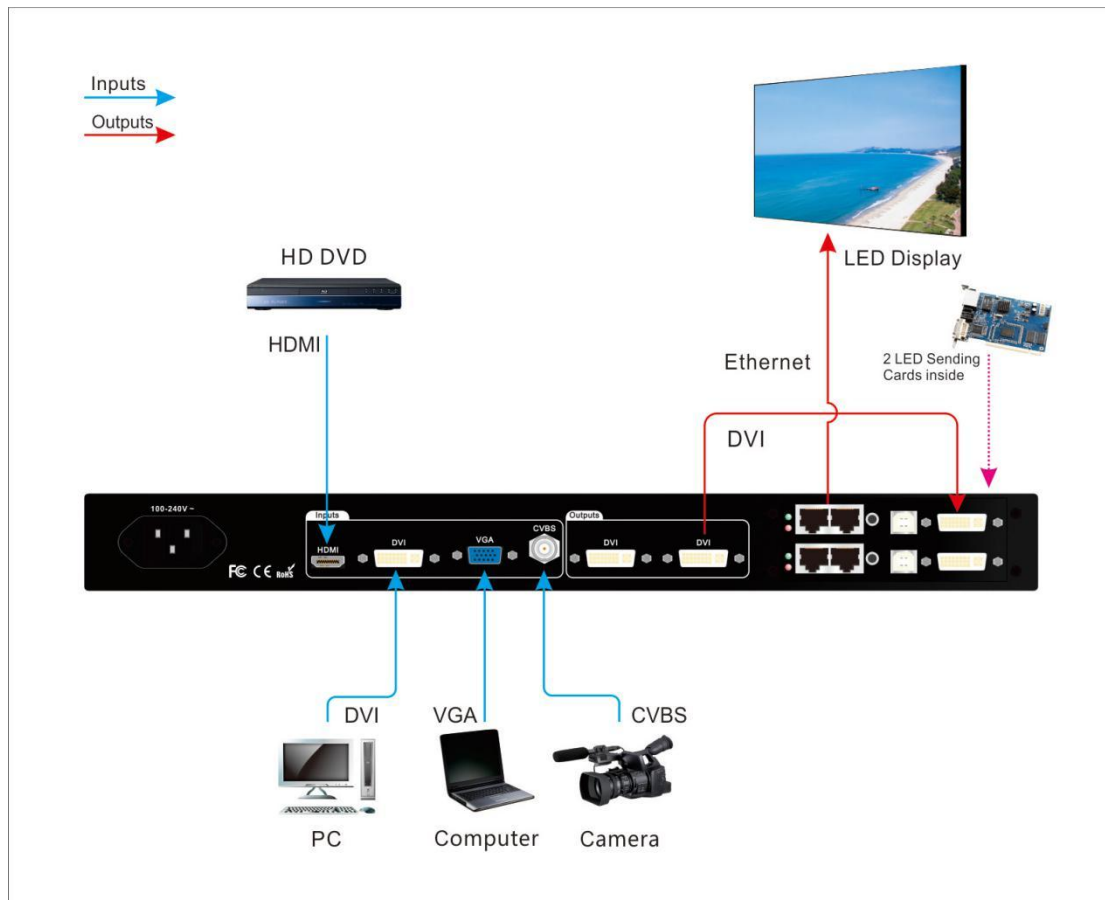
3.2.2 DVI Outputs

Ports	Description
DVI1、 DVI2	2 channels of DVI output port to connect LED sending cards or monitors.

3.2.3 RS232 interface

Ports	Description
RS232	Serial communication interface, RS232 level, connected to the RS232 interface of computer.

3.3 Hardware connection diagram

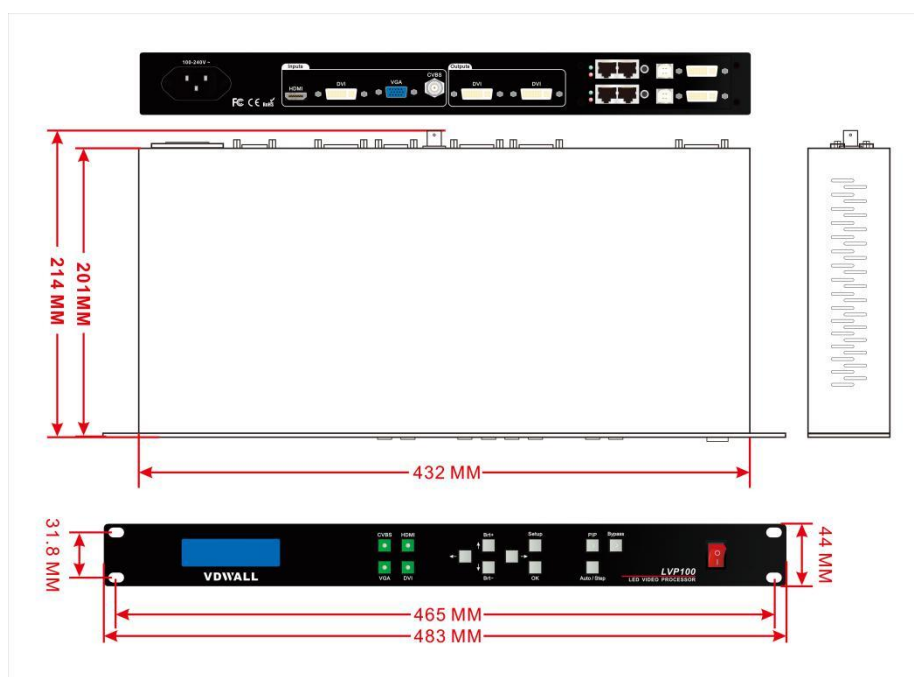


Pic 3-3a LVP100 Hardware connection diagram

3.4 Technical specification

Specification of Inputs		
Quantity / Type	1×CVBS 1×VGA (RGBHV) 1×DVI 1×HDMI (VESA / CEA-861)	
Composite Video Input SYS	PAL / NTSC	
Composite Video Amplitude Impedance	1V (p_p) / 75Ω	
VGA Format	PC (VESA Standard)	≤2048×1152_60Hz
VGA Amplitude the impedance	R、G、B = 0.7 V(p_p) / 75Ω	
DVI Format	PC (VESA Standard)	≤2304×1152_60Hz
HDMI Format	PC (VESA Standard)	≤1920×1080_60Hz
	HDMI1.3 (CEA-861)	≤1080p_60Hz
Input Interface	CVBS: BNC VGA: 15pin D_Sub (Female) DVI: 24+1 DVI_D HDMI: Type-A HDMI port	
Specification of Outputs		
Quantity / Type	2x DVI	
DVI Format	1024×768_60Hz/75Hz 1080×1920_60 Hz 1200×1600_60 Hz 1280×1024_60Hz/75Hz 1366×768_60Hz 1440×900_60Hz 1536×1536_60 Hz 1600×1200_60Hz 1920×1080p_50Hz/60Hz 1920×1200_60 Hz	

	2048×1152_60Hz 2304×1152_60Hz 2560×816_60Hz
Output Interface	DVI OUT: 24+1 DVI_D
Others	
Control Ports	RS232 (Optional)
Voltage of Input	100-240VAC 50 / 60Hz
Power Consumption	≤25W
Temperature of Environment	0-45°C
Humidity of Environment	15-85%
Size of Product	482.6 (L)x200 (W)x44 (H)mm
Packing Size	535 (L)x315 (W)x145 (H)mm
Weight	G.W.: 4Kg, N.W.: 2.5Kg

Product Dimensions:

Pic 3-4a LVP100 Product dimensions

Chapter 4: Description for front panel buttons

4.1 Sketch map of front panel buttons

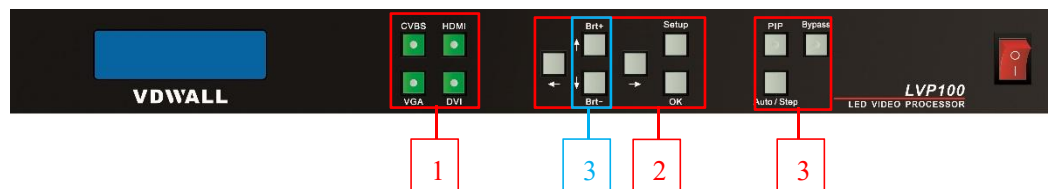


图 Pic 4-1 Sketch map of front panel buttons

- ① Selection buttons of input signals ② Setup buttons ③ Other function buttons

4.1.1 Selection buttons of input signals

Selection buttons of input signals are used for selecting input signals.

CVBS、**VGA**、**DVI**、**HDMI**

4.1.2 Setup buttons

Setup buttons: Set images output parameters

Setup、、、、、**OK**、**Step**

Setup: Enter or escape the setup menu

、: Select setup options

、: Adjust the values or select options for some parameters

OK: Press this button to save parameter

Step: Adjust the step value of parameters

4.1.3 VGA auto-adjustment buttons

VGA auto-adjustment buttons (**Auto**): Adjust VGA input signals automatically.

4.1.4 Brightness adjustment buttons

Brightness adjustment buttons (**Brt+**, **Brt-**): Adjust the output brightness of video processors.

4.1.5 PIP function buttons

PIP: Turn on/off the function “picture in picture” or “picture in picture”. When the indicator is on, that means this function is ready.

4.1.6 Information button (OK)

Press **OK** to check the current settings and information of LVP100 while it is On the state of switching channel.

Chapter 5: Instructions of basic operations for users

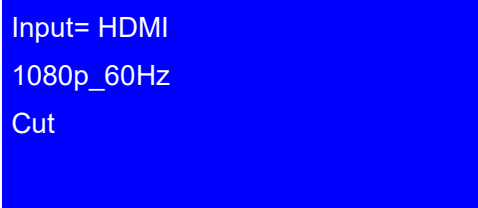
After LVP100 is powered on, LVP909 will automatically detect the device information and enter the user operating status before shutdown last time including switching status, PIP/POP status, parameter, etc. We would describe it on usual basic operations below.

5.1 Selection from input signals

LVP100 enables you to switch it to a new input signal by pressing input buttons, and the input signals selection buttons are as the follow form:

Buttons	Description
CVBS	1 channels of Composite video input (PAL/ NTSC)
VGA	1 channel of PC analog signal input
DVI	1 channel of DVI digital input
HDMI	1 channel of HDMI digital input

LCD screen shows as the follow picture:

A blue rectangular area representing the LCD screen display. It contains three lines of white text: "Input= HDMI", "1080p_60Hz", and "Cut".

Input= HDMI
1080p_60Hz
Cut

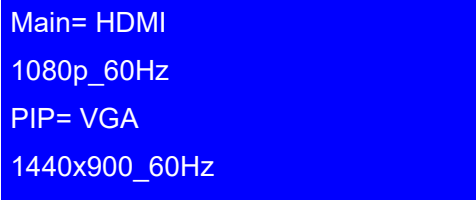
LCD shows the current selected input signal source on the first row after selecting the input signal, such as: "Input: HDMI". LCD shows the status of the current selected input signal source on the second row, if there is no input signal source, it will show "No input", and the indicator flash at the same time. If there do exist an effective input signal, then it will show the input format, such as: " 1080p_60Hz " .

LVP100 can do seamless switching among those input signals except for the switching between DVI and HDMI, these seamless switching effects include 0s speed switching, 1s, 1.5s fade in and fade out switching, you can enter "8. Switch Time" the menu and set it.

5.2 Operations on PIP mode

It is permitted to insert a PIP window on LVP100, this PIP input signal can be any non-grouped input signals (grouped input signals are as follows on page 18). The position and size of these dual image can be set into 4 modes. The detailed operations are as follows:

Enter the dual picture display mode: press **PIP** button and the indicator is on, enter the dual picture display mode, then you can press buttons to select the PIP input signal. The LCD screen will show you what the main input signal and PIP input signal is and the position and size of the corresponding image.(As follows)



Main= HDMI
1080p_60Hz
PIP= VGA
1440x900_60Hz

Change the sub-input: press the corresponding button to select a input signal and this selected input signal is the sub-input.

Change the main input: press those buttons to select the main input signal after pressing PIP button and close PIP mode. Then press PIP button and select the PIP input signal.

Switch PIP mode: when dual picture mode is on, you can press **Setup** then **OK** and enter the interface of PIP Mode switch to the pointed display mode.

5.3 Output brightness selection (BRT+, BRT-)

LVP100 support a 32-level setting for output brightness, the usual brightness value is set to be 32 in order to guarantee that the bias of images are normal.

Buttons	Descriptions
BRT-	To lower the output images' brightness, as low as 0.
BRT+	To increase the output images' brightness, up to 32.

5.4 VGA input automatic adjustment (Auto)

When LVP100 is under the status of "One Key Switching" and the VGA input signal is valid, press the button **Auto** and the sampling parameter of VGA input signal is automatically adjusted, thus lead to a clear image.

This operations only works when a new VGA input signal is connected to the video processor. How long time it takes depends on the status of the input signals, and usually it will not be over 1 minute.

Sometimes you need to repeat this action for several times until we get a clear, intact and stable VGA image.

5.5 Full / Part display (Bypass)

Bypass button enables you to go to full display mode or part display mode. And this function only works when the input signal is sourced from PC(VGA / DVI /HDMI) , the other input signals are fixed to full status.

Status	Descriptions
Full	Full screen status, the input image is filled to the whole LED screen, at this point the indicator of this button is off.
Part	Partly display status, images will not be compressed or stretched, and at this moment, the indicator of this button is on.

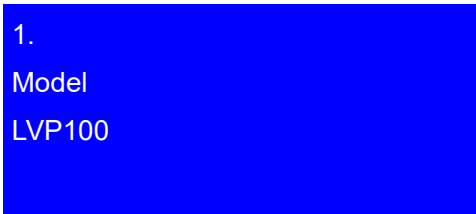
Note: if the width and height of the input signal is less than the size of LED screen(the output width and height), this function doesn't work.

5.6 Freeze

The screen freeze function is operated by the **menu 9 .freeze** option. If the freeze function is opened, the current active screen is frozen. When the function is closed or the signal is switched, the screen freeze function is automatically canceled.

5.7 Check system information (OK)

In the signal switching state, press **OK** button to display the current settings and information of LVP100, continue to press **OK** or **↑ ↓** to check other information items before the menu is exited.



1.
Model
LVP100

Chapter 6: User setup menu instructions

The user setting menu is set for the total processor and is divided into two types of settings, as shown in the following table:

Setting items	Descriptions
Common parameter settings	Language, output settings, signal switching time, freeze, brightness/color/sharpness settings, factory settings, etc.
PIP settings	Background and PIP output parameter settings

(One) Common parameter settings

Adjustment type		Adjustment item	
1	Language	1	Language 语言
2	Output image settings	2	Out_Format
		3	DVI EDID
		4	Out_Hori_Width
		5	Out_Hori_Start
		6	Out_Vert_Height
		7	Out_Vert_Start
3	Switching time	8	Switch time
4	Freeze	9	Freeze
5	Brightness/ Saturation / Sharpness	10	Brightness
		11	Saturation
		12	Sharpness
6	NTSC image mode	13	NTSC Image Mode
7	Test pattern	14	Test pattern
8	Device ID	15	Device ID

9	Factory settings	16	ADC Calibration
		17	DVI Hotplug
		18	Bias
		19	Bright Level
		20	DeInterlace
		21	Device Init
		22	HDMI EDID
		23	LCD contrast

6.1 Enter adjustment settings

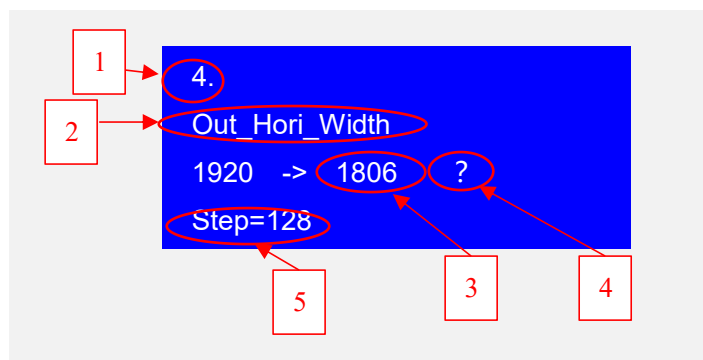
Enter the adjustment settings: In the operation mode (please ensure that the PIP mode is closed), press the **Setup** button, and then press **OK**, LVP 100 will quickly enter the first adjustment item.

Exit the adjustment setting: Press the **Setup** button directly under the adjustment setting, then the LVP100 directly exit the adjustment setting.

After the LVP100 enter the adjustment setting mode, the button functions of the setting are:

buttons	functions
	Switch to the previous adjustment
	Switch to the next adjustment
	Increase the value or select the next choice
	Decrease the value or select the last selected value
Step	Numerical adjustment step
OK	Save adjustment values or select values
Setup	Exit or enter adjustment mode

After the **LVP100** enter the adjustment setting mode, the LCD display shows the relevant adjustment setting information as shown below:



As shown in the above figure, the LCD display consists of 6 display areas:

Area	Descriptions
1	Show current adjustment items
2	Current adjustment item name
3	New adjustment value
4	?: Indicates whether a new adjustment value should be saved; or !: Indicates that the new adjustment value has been saved.
5	Step of the value adjustment

6.2 Language setting

After entering the adjustment setting mode, the LVP100 enters the first item: 1. Language menu,

LVP100 supports both Chinese and English languages.



6.3 Output image settings

LVP100 setting menu items 2 to 7 are output image setting menu:

No	Adjustment items
2	Out_Format
4	Out_Hori_Width
5	Out_Hori_Start
6	Out_Vert_Height
7	Out_Vert_Start

6.3.1 Modify the output resolution

The LVP100 output images from two DVI output ports, having 16 output formats in total. You can enter the **2. Out_Format** option to select the setting. Users can select the output resolution that not less than the LED screen. The 16 output formats are as follows:

No	Adjustment items
1	1024×768_60
2	1024×768_75
3	1080×1920_60
4	1200×1600_60
5	1280×1024_60
6	1280×1024_75
7	1366×768_60
8	1440×900_60
9	1536×1536_60
10	1600×1200_60
11	1920×1080_50

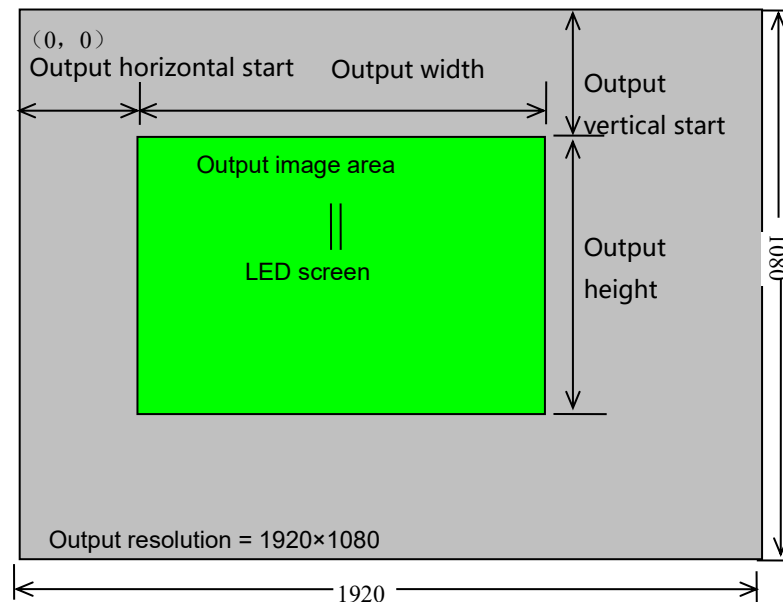
12	1920×1080_60
13	1920×1200_60
14	2048×1152_60
15	2304×1152_60
16	2560×816_60

Modify the output resolution steps:

↑ or ↓ button to select 2. Out_Format, press ← or → to select the correct resolution, press **OK** button, the device will automatically restart, and the changed parameters will take effect.

6.3.2 Set output image parameters

The actual pixel value of the LED display can be any value, so we need to set the LVP100 to just output the pixel size of the LED display, so the LED display shows a whole image.



As shown in the above figure, the size and position of the LVP100 output LED screen window image are defined by 4 groups of parameters, they are:

Adjustment items	Adjustment item name
4	Out_Hori_Width
5	Out_Hori_Start
6	Out_Vert_Height
7	Out_Vert_Start

Steps:

Using the  or  button to select the setting option, press  button to adjust the step size, press  or  to adjust the parameter value, and press the  button to save the parameter.

6.3.3 DVI EDID

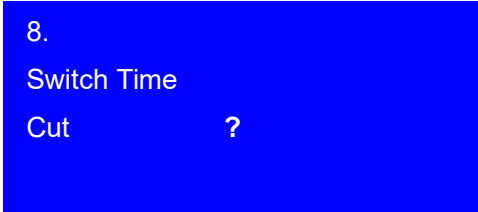
The LVP100 supports the DVI EDID setting function to change the default optimal resolution of the DVI input to ensure that the graphics card can output to the corresponding ultra-wide or ultra-high resolution of the output.

Steps: In the **3. DVI EDID** menu, press  or  to select the appropriate resolution and press  to take the parameter into effect.

3.
DVI EDID
1920x1080p_60 ?

6.4 Switching time setting

This menu item is used to set the switching time between the two different group signals of the LVP100, including 0 second seamless switching and 0.5 second, 1 second or 1.5 second fade-in and fade-out switching.



```

8.
Switch Time
Cut      ?
  
```

6.5 Freeze setting

This menu item is used to realize the function of freezing the current active picture. When the menu is set to "Off" or other signals are switched, the freeze function is automatically turned off.



```

9.
Freeze
On      ?
  
```

6.6 Brightness / Saturation / Sharpness setting

LVP100 can support user-defined brightness, saturation and Sharpness settings. The details are as follows:

Adjustment name	Descriptions
10.Brightness	Refer the "19.Bright Level" to set, There are two adjustment ranges: 0-64 or 0-100, the factory adjustment range defaults to 0-64, and the brightness defaults to 64. The "Bright Level" is set in the factory setting menu.
11.Saturation	Adjustment range: 0~100, default value 50
12.Sharpness	Can be set to smooth or sharp, default smooth

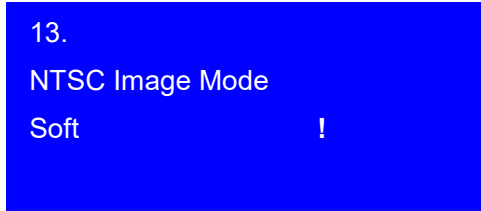
- Notes:** ①. In order to ensure the gray scale of the output image is complete, usually set the output parameter to the default value!
- ②. The color parameters are invalid for DVI and HDMI signals in RGB format, and VGA is in RGB format, so the above signal color parameters are invalid.



11.
Saturation
50 ?
Default=50

6.7 NTSC Image mode setting

This menu item is used to set the display effect when CVBS input is NTSC format signal. It can be set to the **Soft** or **Standard** state. In order to solve the background color of some signal sources is too bright or dark, The default state is **Soft**.



13.
NTSC Image Mode
Soft !

6.8 Test pattern

LVP100 can support 36 test patterns internally for LED display test.

When this option is "off", the test pattern is closed, select other numbers and press **OK** is indicate that selecting the corresponding one of the 36 test patterns.



Notes: The current signal source must be connected to a valid input signal, and the test pattern has output, otherwise there is no output.

6.9 Device ID

The LVP100 supports the device number function to remote control multiple LVP100 processors by the central control. Device number range: 0~255.

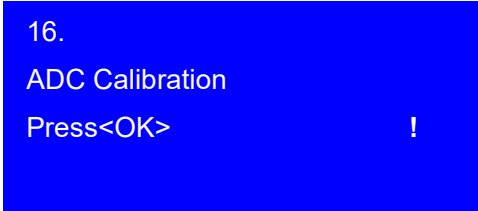


6.10 Factory setting

The 16 to 20 options of the setup menu are factory settings, which are hidden menus. Steps:

Press   button to enter 15. Device ID, then press  button five times, the menu will automatically enter 16.Adc Calibration, and then press  to select the needed options.

6.10.1 ADC Calibration



16.
ADC Calibration
Press<OK> !

Processors that have no ADC correction may have color cast or dark screen when input analog signals. The LVP100 can automatically realize white balance correction based on input analog signals (CVBS, VGA signals) to solve relevant problems. Steps:

Switch to the corresponding analog input signal. After the processor detects the input signal and outputs it to the display, enter the setup menu 15. Device ID, press  button 5 times, the menu will automatically enter 16.ADC calibration, press , then the processor will realize white balance correction.

6.10.2 DVI Hotplug



17.
Dvi Hotplug
On

The DVI hot plug signal is sent by the processor to a signal source system such as a graphics card, as a basis for whether the signal source send a DVI signal to the processor. However, when using some software in a few PC systems to display on the extended desktop, sending a "hot plug signal" may cause the extended desktop display abnormally. In this case, please enter the setup menu "20.DVI Hot Plug". Turn off this function. Steps:

Enter the setup menu 15. Device ID, press **CVBS** button 5 times, the menu will automatically enter 16.ADC calibration, press **↑** continuously to enter 17.DVI hot plug, press **→** switch to select "on" or "off", then press **OK** button, The setting take effect.

6.10.3 Bias



18.
Bias
50
Default=50

In order to reduce low-gray picture noise, LED large-screen systems often remove lower-gray images of input signals, but this will result in loss of image information, especially in dark scenes such as night scenes.

The LVP100 can be corrected by adjusting the "Low Gray Bias" parameter, which is limited to: 0~100. When the dark picture signal is lost, if the value is increased the lost information will recover and display on the LED large screen. In order to ensure the output grayscale is complete, the

standard value is set at 50! Steps:

Enter the menu 15. Device ID, press **CVBS** button 5 times, the menu will automatically enter 16.ADC calibration, press $\uparrow$ to switch to 18.Bias, press $\leftarrow$ or $\rightarrow$ to switch the adjustment parameters, then press **OK** button to make the setting take effect.

6.10.4 Bright level



Bright Level	Descriptions
0-64	0 is the lowest brightness value, 64 is the default standard brightness value.
0-100	Allow higher brightness values, 0 is the lowest brightness value, 50 is the default value.

Users can select the “Bright Level” according needs. “21. Device Init” can’t reset this option. Steps:

Enter the setup menu 15. Device ID, press **CVBS** button 5 times, the menu will automatically enter “16.ADC calibration”, press $\uparrow$ continuously to enter “19. Bright Level”, press $\rightarrow$ to switch to select “0-64” or “0-100”, then Press **OK** to make the setting take effect.

6.10.5 DeInterlace

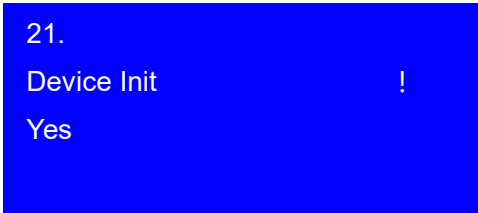


20.
DeInterlace
On

This option is used to remove the shake phenomenon of CVBS / HDMI input interlaced signals (such as 1080i) and used as PIP, but will reduce image quality. Steps:

Enter the setup menu 15. Device ID, press **CVBS** button 5 times, the menu will automatically enter “16.ADC calibration”, press **↑** continuously to enter “20. DeInterlace”, press **→** to switch to “On”, then press **OK** to make the setting take effect.

6.10.6 Device Reset



21.
Device Init !
Yes

This option is used to reset the LVP100's parameter to the factory state. Steps:

Enter the setup menu 15. Device ID, press **CVBS** button 5 times, the menu will automatically enter “16.ADC calibration”, press **↑** continuously to enter “21. Device Init”, press **→** switch to select “Yes”, then press **OK** to make the setting take effect.

Appendix: correction log table

Version	Date	Descriptions	Draft
1.0	2018.6.21	LVP100 first release	Lts