LVP601S
LED Video Processor

USER'S MANUAL

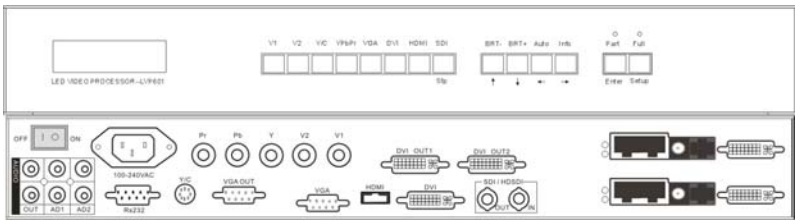

TABLE OF CONTENTS

I. Safety Precautions

Danger!

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

Warning!

1. This device shall not encounter water sprinkle or splash, please do not place anything containing water on this device.
2. To prevent fire, keep this device far from any fire source.
3. To keep good ventilation, there shall be at least 20cm interval between frontal and rear panel of the device.
4. If this device gives out any strange noise, smoke or smell, please immediately unplug the power cord from receptacle, and contact local dealer.
5. **Please do not plug or unplug DVI signal cable when the device on power.**

Caution!

1. Please thoroughly read this manual before using this device, and keep it well for future reference.
2. In the event of lighting or when you are not going to use the device for a long time, please pull the power plug out of receptacle.
3. Nobody other than professional technicians can operate the device, unless they have been appropriately trained or under guidance of technicians.
4. To prevent equipment damage or electric shock, please don't fill in anything in the vent of the device.
5. Do not place the device near any water source or anywhere damp.
6. Do not place the device near any radiator or anywhere under high temperature.
7. To prevent rupture or damage of power cords, please handle and keep them properly.
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.

II. Connections of hardware

1. Rear view

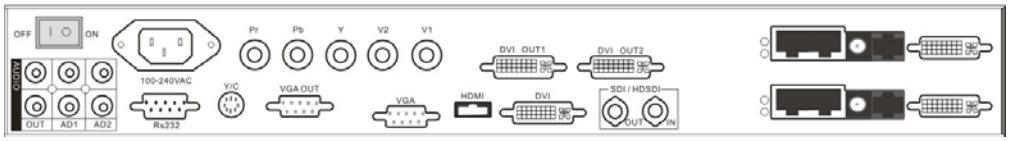

Figure 1

2. Port description

1） Video Input

LVP601S supports 8-channel signal input, including:

Port name	Description
V1~V2	2-channel PAL/NTSC composite video input
Y/C (**S_Video**)	1-channel PAL/NTSC S_Video input
YPbPr	1-channel SD/HD component signal input
VGA	1-channel computer analog signal input
DVI	1-channel computer digital signal input
HDMI	1-channel digital SD/HD signal input
SDI / HDSDI(**IN**)	1-channel **SDI** input (SD/HD)

2） Audio Input

LVP601S supports 4-channel stereo audio switch. Of which, 2 channels are HDMI and SDI audio, the other 2 channels are AD1, AD2 external input audio. AD1 and AD2 can be mapped to the V1, V2, Y/C, YPbPr, VGA or DVI video input, and will be switched synchronous to the selection of video input signals.

3） Video Output

Port name	Description
VGA OUT	1-channel analog RGBHV signal output, it can be connected to a local display device and used as monitor (it is strongly recommended to use this port when operating and setting **LVP601S**).
DVI OUT 1 / DVI OUT 2	2 same DVI digital graphic signal output, it can be connected with external LED transmission

	card or LED transmission box
SDI / **HDSDI** (**OUT**)	1-channel digital video signal loop output

4） Audio Output (AUDIO OUT)

Corresponds to the selected video input signal, output this channel audio input signals.

5） Signals of other ports

RS232 serial communication port, a spare port.

III. Frontal panel operations

1. Diagram of frontal panel

Figure 2

2. Button instructions (operation mode):

1) Select input video source

Button names	Description
V1, V2	Select V1, V2 BNC port from which signal is input
Y/C (**S_Video**)	Select S-Video from which signal is input
YPbPr	Select component signal input
VGA	Select computer analog signa input
DVI	Select computer digital signal input
HDMI	Select HDMI digital signal input
SDI	Select SDI (HDSDI) digital video signal input

Switch audio input while operating above buttons, select the audio signal input from corresponding video input to output it through **Audio OUT**.

Notes: when user has selected input signal, the current input signal source that you selected, e.g.: **HDMI** will appear in the first line in LCD, and the status of current input signal source will appear in the second line. If there are no valid signal input, "**No Input**" will appear in the screem and dark screen will be displayed on the LED screen; if the signal is valid, the input signal format, e.g.: " **1080p_60Hz** " will appear in the screen.

2) Select output brightness

Button names	Description
BRT -	Decrease output image brightness of **LVP601S,** the lowest brightness is 0.
BRT +	Increase output image brightness of **LVP601S,** the highest brightness is 64.

LVP601S supports 32 levels Brightness, "0" represents the lowest brightness, 64 represents the highest brightness. To ensure full gray level of output image, normally the output brightness is set as 64!

3) VGA input auto adjustment (Auto)

When the current VGA input source of **LVP601S** is a valid signal, press this button, **LVP601S** will automatically adjust the sampling parameters of the VGA signals, so as to make VGA picture clean and complete.

In general, this operation is made only when new VGA signal source is to be connected in. The time spent in auto adjust depends on the conditions of signal source, but will be no longer than 1 minutes. Sometimes user need repetitively do such adjustment till VGA picture looks clean, complete and stable.

4) Information display (Info)

Press this button to view current settings and information of **LVP601S**, it consists of 15 items. If you press "**Info**" again before **LVP601S** exit information display, **LVP601S** will continue to display the next item of information.

5) Select Full/Part display (Full, Part)

Button names	Description
Full	Full means that LED will display a full picture.
Part	Part means that LED only display a part of a picture.

IV. Setup

The following setups must be made by relevant qualified technicians. For ordinary users, unless they have received adequate relevant training, they shall not attempt the following setup operations!

There are 14 items in 5 categories available for you to set in **LVP601S**. Technicians can set these items as necessary, for details see the table below:

Category		Items		Description
1	Language Selection	1	***Language 语言***	
2	Output Image Setup	2	***Hori_Start***	Output horizontal start
		3	***Hori_Width***	Output width
		4	***Vert_Start***	Output vertical start
		5	***Vert_Height***	Output height
		6	***Out_Format***	Output resolution
3	Brightness / Color	7	***Brightness***	
		8	***Color***	
4	Input Image Setup	9	***Input_Width***	Width of input image
		10	***Input_Height***	Height of input image
		11	***Hori_In_Str***	Input horizontal start
		12	***Vert_In_Str***	Input vertical start
5	Audio Configurations	13	***Audio1 Confi***	Audio1 configurations
		14	***Audio2 Confi***	Audio2 configurations

1. Enter Setup of LVP601S

Press "Setup" for consecutive 8 times while in operation mode, " **Password: 8 Enter Setup …**" will appear in LCD, **LVP601S** will enter the No.1 setup item.

After **LVP601S** enters the setup mode, the 7 buttons on frontal panel will have the functions as defined in table below:

Name	Functions
Step	Select step value 1 or 10
↑	Move to last item
↓	Move to next item
←	Decrease value or select last value

→	Increase value or select next value
Enter	Save the adjustment or selected values
Setup	Enter or exit setup mode

After **LVP601S** enters setup mode, the relevant setup information will be displayed in LCD as per the layout shown in the figure below:

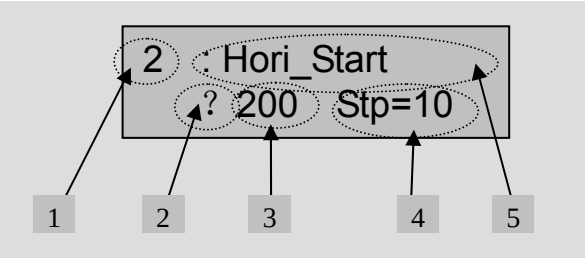

Figure 3

As shown in above figure, LCD consists of five sectors:

Sector	Description
1	The No. of current setup item
2	？: ask you whether to save the adjustment； ！: the adjustment already be saved and takes effect.
3	Newly adjusted value
4	Step value
5	Name of current setup item

2. Select language

No.1 Item: "***Language 语言***"

After entering setup mode, **LVP601S** will enter the first setup item "***Language 语言***". **LVP601S** supports Chinese and English display, press " ← " or " → " to select either of them, then press "**Enter**" to save it and make it valid.

3. Output image setup

LVP601S outputs images from VGA OUT, DVI OUT1 and DVI OUT2. there are 7 output formats as listed in the table below. User can enter the No.6 setup item "***Out_Format***" to select one fo them.

	Format
1	1024×768_60
2	1024×768_75

3	1280×1024_60
4	1280×1024_75
5	1600×1200_60
6	1920×1080_50
7	1920×1080_60

No.6 Item: "***Out_Format*** "

Press " ←" or " →" key to select 1 output format listed under this option, then press "**Enter**" to save it.

If you select "**1024×768_60**", the output resolution of **LVP601S** will be 1024×768, the vertical refresh rate is 60Hz.

However, the resolution of LED screen is not exactly 1024×768 pixels. When the resolution of LED screen is less than 1024×768 pixels, we can set **LVP601S** to output the images exactly fitting the resolution of LED screen, so that the LED could display a full frame of image. See the schematic diagram below:

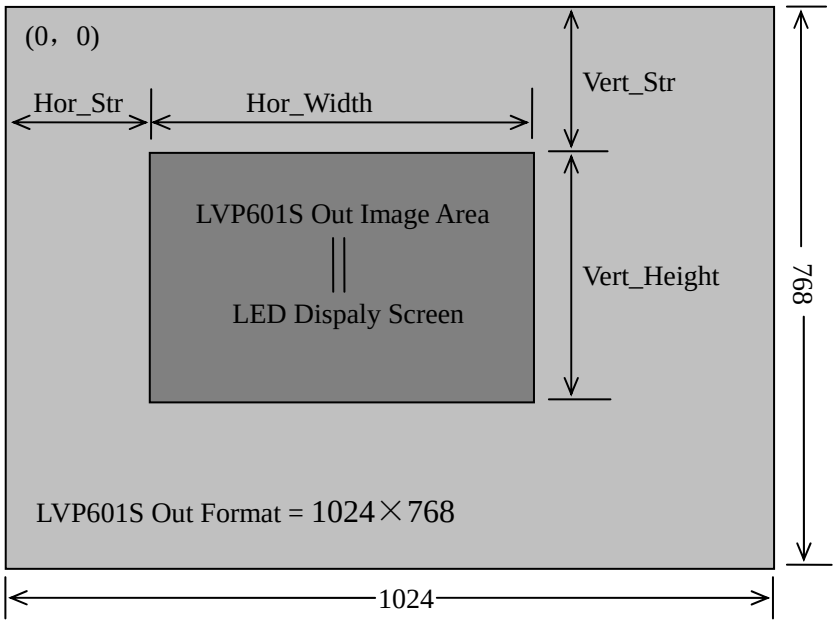

Figure 4

As above figure shows: the size and location of **LVP601S** output images are defined by 4 groups of parameters, which correspond to four setup items respectively, for details of their relationship see Table 5 below:

No. of setup item	Setup Item Name	Names of parameters
2	***Hori_Start***	Hor_Str
3	***Hori_Width***	Hor_Width
4	***Vert_Start***	Vert_Str
5	***Vert_Height***	Vert_Height

The start coordinates (0, 0) of **LVP601S** output image is defined in the right_top of 1024×768 pixels output area.

Set the four setup items as listed in above table as per the size of current LED screen (pixels) and start position of the input image that LED displays. Press " ↑ " or " ↓ " to select setup item, press " ←" or " →" to increase or decrease the values of current item. Press "**Enter**" to save the settings.

4. Brightness / Color

No.7 setup item: "***Brightness*** "

LVP601S supports 32 levels Brightness, "0" represents the lowest brightness, 64 represents the highest brightness.

Press " ←" or " →" to increase or decrease the values of brightness. Press "**Enter**" to save the settings.

To ensure full gray level of output image, normally the output brightness is set as **64** !

No.8 Item: "***Color*** "

For V1, V2, Y/C, YPbPr and HDMI video input source, **LVP601S** can set color saturation for them ranging between 22-38. The lower this value is, the weaker the color looks; the higher this value is, the stronger the color looks. Press " ←" or " →" to increase or decrease the values of color saturation. Press "**Enter**" to save the settings.

Normally the value of color saturation is set as **30** !

5. Input image setup

LVP601S supports multiple machine to work together in parallel, in such mode, a number of small LED screen make up a large screen. If the output format of **LVP601S** is:1920×1080, when 2 sets of **LVP601S** are connected in parallel, they can connect any LED screen of no higher than 3840×1080 pixels.

When a number of **LVP601S** are connected in parallel in applications, user should set input image parameters of each **LVP601S.** For details of parameters see the table below:

Items No.	Item Name
9	***Input_Width***
10	***Input_Height***
11	***Hori_In_Str***
12	***Vert_In_Str***

Figure below shows the example of a 2×2 sets of **LVP601S** connected in parallel, in which 4 small LEDs makes up a large screen. Provided the resolution of each small LED is 1728×960, the output image of each set of **LVP601S** will first be set as below:

Out_Format = 1920×1080

Hori_Width = 1728

Vert_Height = 960

Then we should set the input images of each set of **LVP601S**. As shown in figure below, to show a complete large picture, each set of **LVP601S** shall capture the corresponding part of input images.

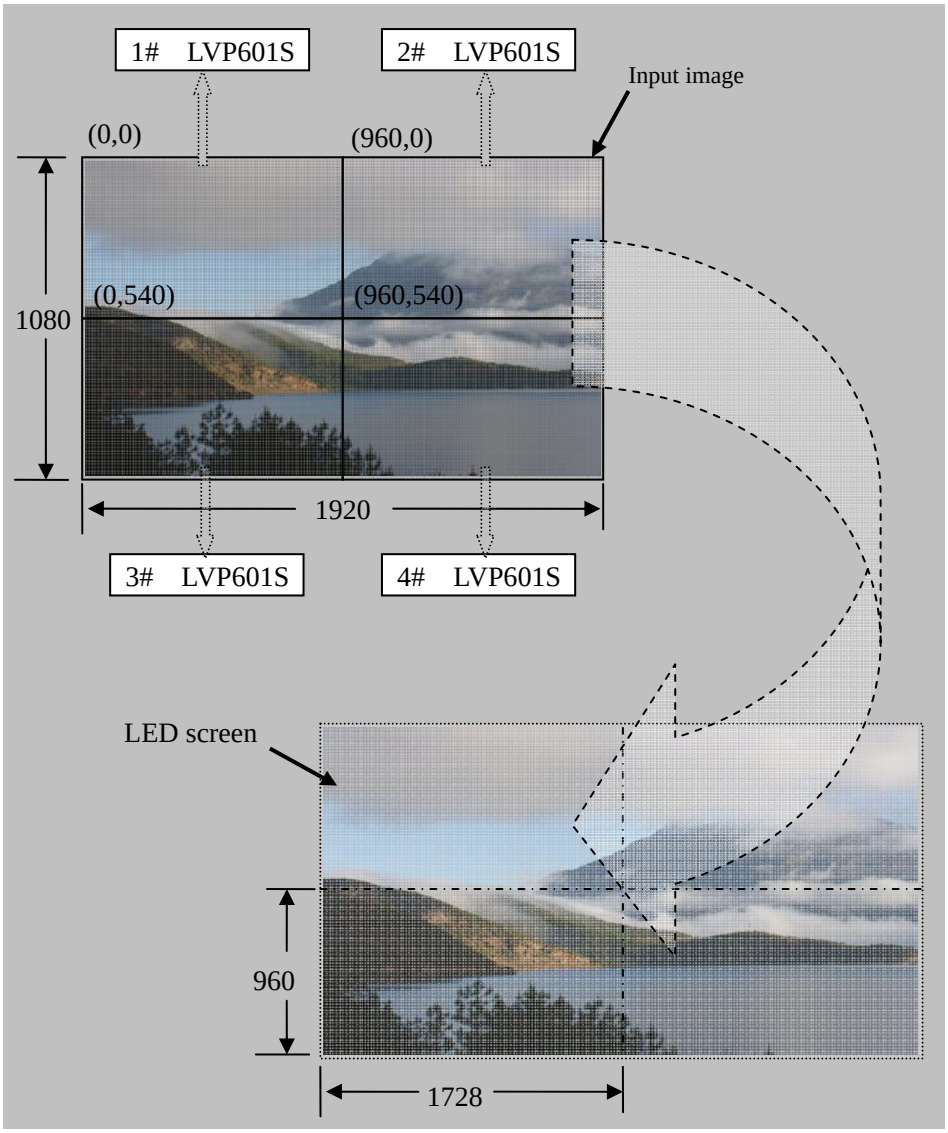

Figure 5

No.9 Item: "***Input_Width*** "

This item has three values for your choice, i.e.: **100%**, **1/2** and **1/3**. **100%** means that 100% images in horizontal direction are input; **1/2** means only a half of images are input. If 3 sets of **LVP601S** are connected in parallel in horizontal direction, each set of **LVP601S** will capture 1/3 of input image. Press " ←" or " →" key to select width of input image, then press "**Enter**" to save the settings.

As shown in Figure 5, the width of input image for the 4 sets of **LVP601S** should be set as:

***Input_Width* = 1 / 2**

No.10 Item: "***Input_Height*** "

This item has three values for your choice, i.e.: **100%**, **1/2** and **1/3**. **100%** means that 100% images in verticaltal direction are input; **1/2** means only a half of images are input. If 3 sets of **LVP601S** are connected in parallel in vertical direction, each set of **LVP601S** will capture 1/3 of input image. Press " ←" or " →" key to select height of input image, then press "**Enter**" to save the settings.

As shown in Figure 5, the height of input image for the 4 sets of **LVP601S** should be set as:

***Input_Height* = 1 / 2**

No.11 Item: "***Hori_In_Str*** "

It is used to set the horizontal start point of input image from which **LVP601S** will capture. As shown in Figure 5, the the horizontal start point of the four sets of **LVP601S** are set as below respectively:

1# **LVP601S *Hori_In_Str* = 0**
2# **LVP601S *Hori_In_Str* = 960**
3# **LVP601S *Hori_In_Str* = 0**
4# **LVP601S *Hori_In_Str* = 960**

No.12 Item: "***Vert_In_Str*** "

It is used to set the vertical start point of input image from which **LVP601S** will capture. As shown in Figure 5, the the vertical start point of the four sets of **LVP601S** are set as below respectively:

1# **LVP601S *Vert_In_Str* = 0**
2# **LVP601S *Vert_In_Str* = 0**
3# **LVP601S *Vert_In_Str* = 540**
4# **LVP601S *Vert_In_Str* = 540**

6. Audio configurations

LVP601S supports 4 channels of dual-channel audio switch. Of which, 2 channels are HDMI and SDI audio, the other 2 channels are AD1, AD2 external input audio. AD1 and AD2 can be mapped as audio input for V1, V2, Y/C, YPbPr, VGA or DVI video input, and will be switched synchronous to the switch of video input signals.

No.13 Item: "***Audio1 Config*** "

Press " ←" or " →" to select 1 channel of video input signals from **V1**, **V2**, **Y/C**, **YPbPr**, **VGA and DVI,** map **AD1** external input as audio input signals to the video signals in this channel, then press " **Enter**" to save the settings.

No.14 Item: "***Audio2 Config*** "

Press " ←" or " →" to select 1 channel of video input signals from **V1**, **V2**, **Y/C**, **YPbPr**, **VGA and DVI,** map **AD2** external input as audio input signals to the video signals in this channel, then press " **Enter**" to save the settings.

Notes: AD1, AD2 can't be mapped to the video input signals in the same channel.

7. Exit setup

No.15 Item: "***Exit Setup*** "

Press " ↓ " to move to the last item: " ***Exit setup*** ", then press " ←" or " →" to select " **YES** ", then press " **Enter**" to exit setup mode.

If you press " **Setup**" key while in any setup mode, the system will skip to the No.15 item.

V. Specifications

Inputs	
Nums/Type	2×composite video 1×Y/C video (S_Video) 1×YPbPr 1×VGA (RGBHV) 1×DVI 1×HDMI 1×SDI (HDSDI)
Video system	PAL/NTSC
Composite Video Scope/Impedance	1V (p_p) / 75Ω
Y/C Scope/Impedance	Y=0.7V (p_p) / 75Ω，C=0.35V (p_p) / 75Ω
VGA Format	640×480@60Hz/72Hz/75Hz 800×600@56Hz/60Hz/72Hz/75Hz/85Hz 1024×768@60Hz/70Hz/75Hz/85Hz 1152×864@75Hz 1280×960@60Hz/85Hz 1280×1024@60Hz/75Hz/85Hz 1600×1200@60Hz 1920×1080@60Hz　etc.
VGA Scope/Impedance	R、G、B = 0.7 V (p_p) / 75Ω
DVI / HDMI Format	720×400@70Hz/88Hz 640×480@60Hz/67Hz/72Hz/75Hz 800×600@56Hz/60Hz/72Hz/75Hz/85Hz 832×624@75Hz 1024×768@60Hz/70Hz/75Hz/85Hz 1152×870@75Hz 1280×960@60Hz/85Hz 1280×1024@60Hz/75Hz 1600×900@60Hz 1600×1200@60Hz 1680×1050@60Hz 720×480i@59.94Hz/60Hz 720×480p@59.94Hz/60Hz 720×576i@50Hz 720×576p@50Hz 1280×720p@50Hz/59.94Hz/60Hz 1920×1080p@24Hz/25Hz/30Hz /50Hz/59.94Hz/60Hz 1920×1080i@50Hz/59.94Hz/60Hz　etc.

YPbPr Format	720×480i@59.94Hz/60Hz 720×480p@59.94Hz/60Hz 720×576i@50Hz 720×576p@50Hz 1280×720p@50Hz/59.94Hz/60Hz 1920×1080p@50Hz/59.94Hz/60Hz 1920×1080i@50Hz/59.94Hz/60Hz
YPbPr Scope/Impedance	Y= -0.3V ~ +0.7V (p_p) / 75Ω Pb= -0.35V ~ +0.35V (p_p) / 75Ω Pr= -0.35V ~ +0.35V (p_p) / 75Ω
SDI/HDSDI format	720×480i@59.94Hz/60Hz 720×576i@50Hz 1280×720p@50Hz/59.94Hz/60Hz 1920×1080i@50Hz/59.94Hz/60Hz
Input Connectors	VGA：15pin D_Sub(Female) DVI：24+1 DVI_D YPbPr: BNC×3 Composite video：BNC Y/C video：4pin mini DIN(Female) SDI/ HDSDI ：BNC
Outputs	
Nums/Type	1×VGA (RGBHV) 2×DVI
VGA/DVI Format	1024×768@60Hz/75Hz 1280×1024@60Hz/75Hz 1600×1200@60Hz 1920×1080p@50Hz/60Hz
VGA Scope/Impedance	R、G、B = 0.7 V (p_p) / 75Ω
Output Connectors	VGA：15pin D_Sub(female) DVI OUT1：24+5 DVI_I DVI OUT2：24+1 DVI_D
Others	
Control	Panel Button
Power	100-240VAC 60W 50/60Hz
Operating Temp	5-40 ℃
Humidity	15-85%
Size	155 mm (high) ×350mm (wide) × 485mm (length)
Weight	5.6 Kg

VI. Notes to model

LVP601S: with **SDI / HDSDI** input interface.
LVP601: without **SDI / HDSDI** input interface. So all instructions regarding **SDI**、**HDSDI** in above don't apply to **LVP601**!