

ViewSync3000LA
LED Image Processor

User's Manual

I. Safety Precautions

! Danger

There is high voltage inside the processor, to avoid danger of electric shock, nobody other than professional technicians is allowed to open the rear cover.

! Warning

- Don't drop or pour liquid into the device, not place anything containing liquid on the device;
- To prevent fire, don't place the device near any fire source;
- To keep good ventilation, reserve at least 20cm space both in front of and behind the device;
- If the device gives out strange noise, smoke or unexpected odor, please pull the plug out of receptacle immediately and contact the dealer;
- **Please do not plug or unplug DVI signal cable when the device on power.**

! Caution

- Please read this Manual thoroughly before using the device and keep it well for future use;
- Pull power plug out of receptacle while in lightning weather or when you are no going to use it for a long time;
- Nobody other than professional technicians is allowed to operate this device, to use it, please first get guidance from technicians;
- Don't have the vent of the device blocked by anything, so as to avoid damage to device or electric shock;
- Don't place the device neat water sources or damp places;
- Don't place the device near radiator or other heat source;
- Please handle of power cords properly, so as to prevent it chafing;
- In any of the following events, please pull power plug out of receptacle and have engineers repair the device:
 - ◇ Power plug cord is damaged or worn;
 - ◇ There is liquid pouring in the device;
 - ◇ The device is dropped down or cabinet is damaged;
 - ◇ The device malfunctions or its performance degrades.

II. Hardware Architecture

1. Brief Introduction of System Architecture

Input and output of **ViewSync3000LA** employ plug and play (card-style) architecture, the type and number of input and output image signal can be configured on user's demand. In general, **ViewSync3000LA** includes 4 types of image processing boards and cards as listed in table below:

Table 1

Names of card or board	Quantity of one device	Purpose
Master input capture card	1	Capture Master input image
Image output card	Maximum 9 channels, equal to the number of display units	Output the processed image signals to each display unit.
Sub-input capture card	Each image output card can be configured with 1 Sub-input capture card	Capture Sub-input image
Image data transfer bottom board	1	The transfer path of image data from input to output.

Each set of stand-alone **ViewSync3000LA** is to configured with 1 Master input image capture card, the number of image output card is equal to number of displaying units. As appropriate each image output card can be configured with 1 Sub-input image capture card on user's demand.

Upon input processing, Master input image signal can be output by each image output card, while Sub-input image signal can only be output by its mated image output card. Hence, if user need display 1-channel input image on a merged display wall consisting of several displaying units, the image signal must be processed by Master input capture card of **ViewSync3000LA**.

The image data flow of **ViewSync3000LA** between boards and cards is shown as below:

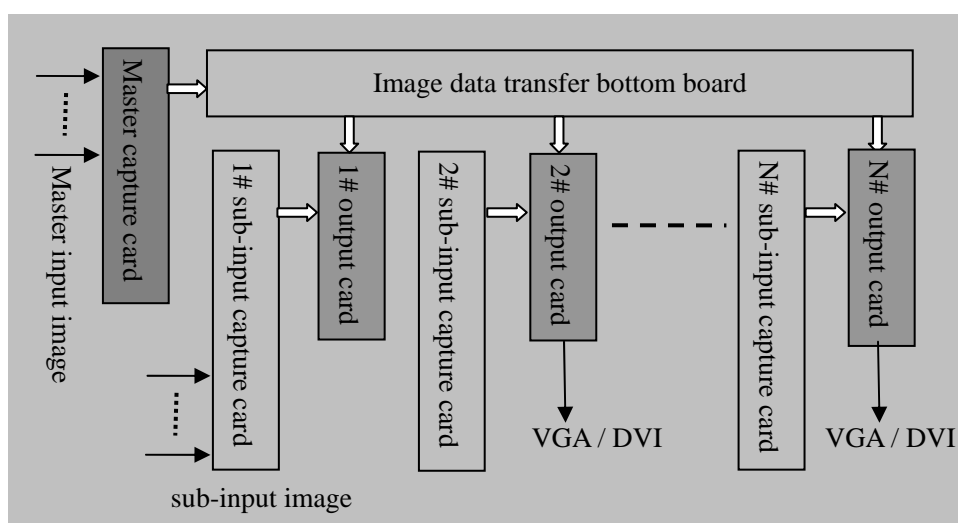


Figure 1

2. Master Input Ports

Each set of stand-alone **ViewSync3000LA** is to be configured with one Master input image capture card, which can capture the image signals as listed in the table below.

Table 2:

Forms of signal	Number of signals	System / Format
Composite video V1-V2	2	PAL / NTSC
S-Video (Y/C)	1	PAL / NTSC
VGA	1	800 × 600 @60Hz 1024 × 768 @60Hz 1280 × 1024 @60Hz
DVI	1	800 × 600 @60Hz 1024 × 768 @60Hz 1280 × 1024 @60Hz
YPbPr	1	1280 × 720p @60Hz 1920 × 1080i @60Hz

Notes: CVBS (V1-V2) and S-video(Y/C) signals can be set up as rambling PIP, overlaid on the YPbPr, DVI or VGA master input image.

3. Sub-input Ports

Each output card of **ViewSync3000LA** can be mated with a Sub-input image capture card, which can capture the image signals as listed in the table below.

Table 3:

Forms of signal	Number of signals	System / Format
Composite video (V2s)	1	PAL / NTSC
S-Video (Y/C)	1	PAL / NTSC
VGA	1	800×600 @60Hz 1024×768 @60Hz 1280×1024 @60Hz

4. Output Image Ports

The image output card of **ViewSync3000LA** can output two types of signals, i.e. VGA and DVI, both formats are: 1024×768@60Hz

5. Signal Input and Output Ports of ViewSync3000LA

Taking **ViewSync3013LA** for instance, this port is configured with: 3 output cards + 3 Sub-input image capture cards.

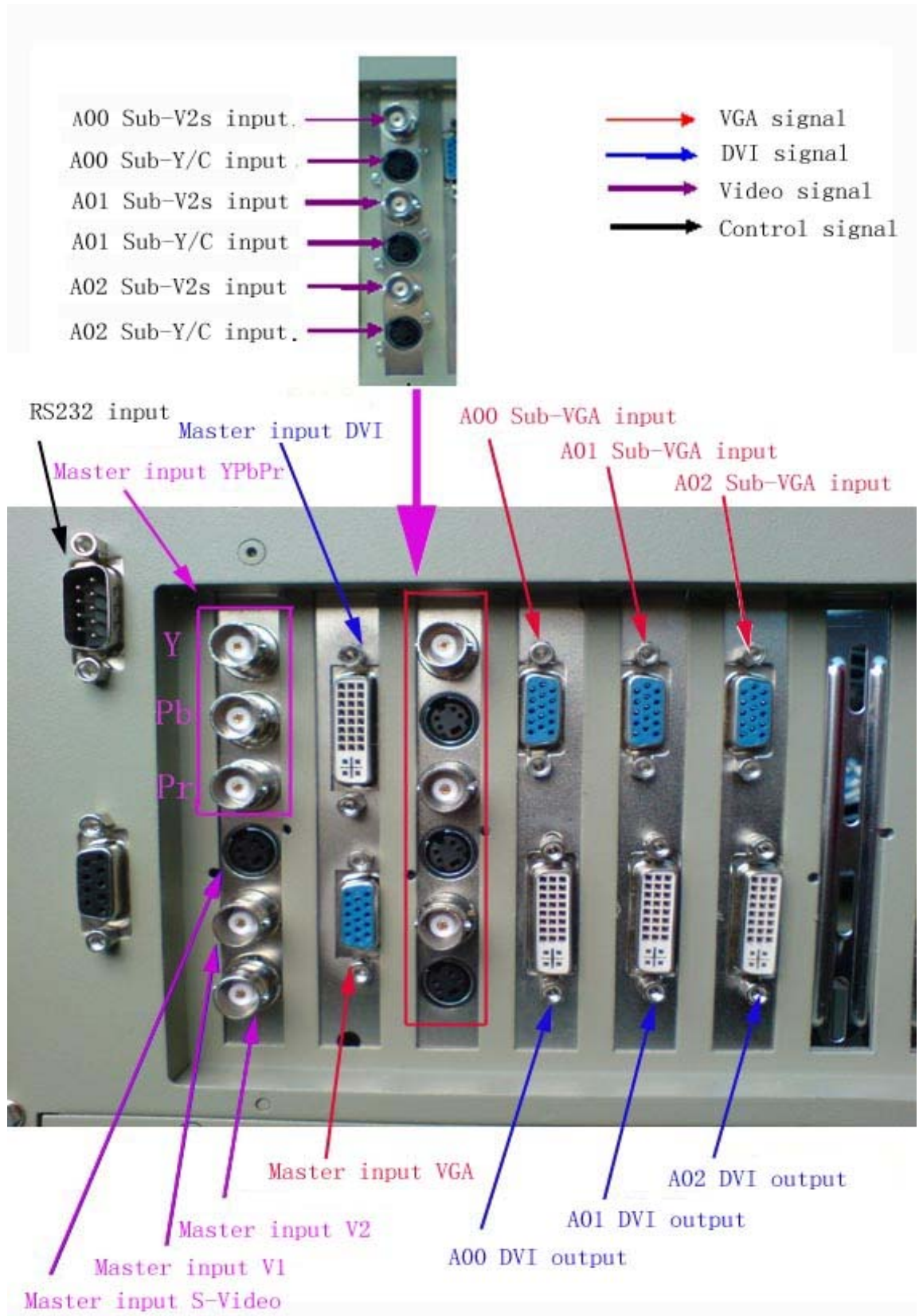


Figure 2

III. Setup and Operations of ViewSync3000LA

ViewSync3000LA needs to be setup by appropriate software, not until the setup is finished, can you operate it.

Setup items of **ViewSync3000LA**:

Table 4:

Items	Descriptions
LED setup	Basic setup of ViewSync3000LA , the size and location of input image that each image output card capture in each display mode, and output this part of input image to designated display area.
Definition	2 definition modes
Synchronous modes	Force and Self-Synchronization. This model should be set up as "Force" synchronous mode
Rambling PIP setup	Set the location and size of rambling PIP in the master input image.

ViewSync3000LA is to be setup by professional technicians, once the setup is finished, user can operate and use the device. Table 5 below lists the main operation items of **ViewSync3000LA** that user will perform.

Table 5:

Operation items	Descriptions
Select Master input signal	Select Master input image signal
Select output brightness	8-level output brightness
Select image display modes	4 image display modes
Switch between Master/Sub-input signal	Specific units to display Master input image or Sub-input image
Full Master input	All units display Master input image
Full Sub-input	All units display Sub-input image
Select Sub-input signal	Select Sub-input image signal of specific units

1. Software Operation Instructions of ViewSync3000LA

Run the program  ViewSync3000LA.exe , the system will enter the following interface immediately:



Figure 3

1) Select COM Port

ViewSync3000LA receives control commands from computer via an RS232 serial bus, user can select appropriate COM port No. in this option column, as shown in the above figure, COM1 is selected.

RS232 serial cable of **ViewSync3000LA** is directly connected using wires 2, 3, 5, one end is male, and the other is female.

2) Master Input Signal Select

User can select Master input image signal to be displayed in this option column. **ViewSync3000LA** supports 2-channel Composite video (V1, V2) input ,1-channel S-Video (Y/C) input, 1-channel YPbPr input,1- channel VGA input and 1- channel DVI input.

3) Select Brightness

ViewSync3000LA supports 8-level fast brightness adjustment, level 8 is the highest, level 1 is the lowest.

4) Rambling PIP Display Mode Switch

Rambling PIP video image can be displayed in the merged image in two modes:

- overlaid display in the random location in rambling PIP mode.**
- cover the whole merged image in full display mode**

To make switch between the two display modes, click button



as figure 3 shows.

5) Select Display Modes

Display modes represent the combinational display forms of input image signal in an merged display wall that **ViewSync3000LA** drives, each display mode is to be preset as per the requirements of engineering application, user can directly shift between these modes by selecting display modes.

ViewSync3000LA supports 4 image display modes.

The following figures are example of these four display modes of a combinational display wall which merged with two LED display screen, each has pixel matrix: 512x512, total pixel matrix is 1024×512, Width/Height ratio is 2:1 (see Figure 4 below)

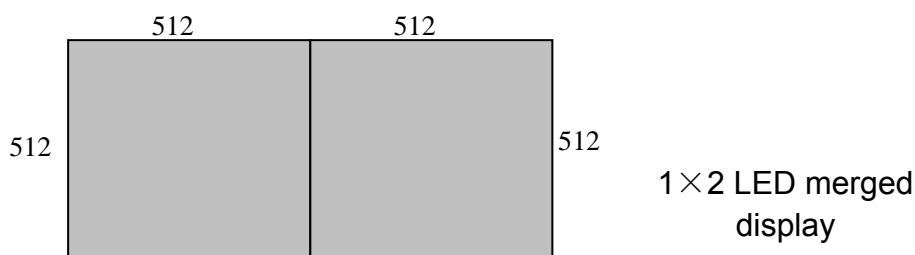


Figure 4

Now, we need display 1-channel NTSC video image on the merged LED screen, the Width/Height ratio of the image is 4:3 (See Figure 5 below).



NTSC input video image

Figure 5

Hereby we define 4 display modes:

i. Mode 0

The Width/Height ratio of input image changes into 2:1, it exactly fits the merged LED screen with 1024×512 pixel matrix (see Figure 6 below)



Mode 0

Figure 6

ii. Mode 1

The Width/Height ratio of input image doesn't change, the image is completely displayed in the center of LED screen with 1024×512 matrix, the rest parts in both sides of the screen is black (see Figure 7 below):



Mode 1

Figure 7

iii. mode2

The Width/Height ratio of input image doesn't change,

image is displayed fully in horizontal, but the over top and bottom are cut off, only the vertical middle part is displayed in merged LED screen of 1024×512 matrix (see Figure 8 below):

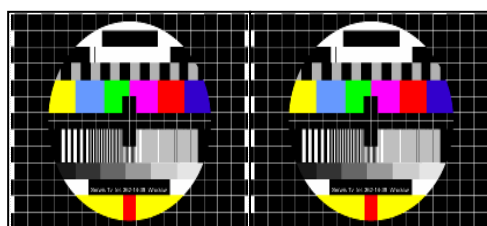


Mode 2

Figure 8

iv. Mode 3

The input image is completely displayed in the left and right section of the LED screen respectively (see Figure 9 below):



Mode 3

Figure 9

6) Master/Sub switch

If the image output card of **ViewSync3000LA** is configured with a Sub-input capture card, the image output card can display not only the image from Master input, but also the image from Sub-input, this option column is used to switch Master/Sub-input signal.

ViewSync3000LA displays Sub-input image signal in picture-in-picture (PIP) mode, of which, Master input image is displayed as background, Sub-input image signal is displayed as PIP. When the window of picture-in-picture is smaller than background picture, the switch operation will pop-up or conceals the display of Sub-input.

Before switch between Master/Sub-input, user should first select specific display units, that is to say, he should first select Sub-input capture card.

7) Sub-input Signal Select

The Sub-input capture card of **ViewSync3000LA** can capture 3-channel signals (see Table 3). 1-channel CVBS (V2s) input, 1-channel S-Video(Y/C) input and 1-channel VGA input. The selected channel is used as the sub-input one of the display unit.

User needs to select specific display units, namely Sub-input capture card for Sub-input signal switching. When there are acceptable signals in corresponding ports, the **ViewSync3000LA** will display these images, otherwise black screen will appear.

8) All Master

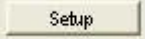
All image output cards of **ViewSync3000LA** output Master input image.

9) All Sub

All image output cards configured with Sub-input capture card output Sub-input image.

2. Output Image Setup of ViewSync3000LA

LED setup is the basic setup of **ViewSync3000LA**, it is to setup the size and location of input image that each image output card capture in each display mode, and output this part of input image to designated display area.

Click  button in the software interface as shown in Figure 3, enter password: 123456, the system will enter the following interface:

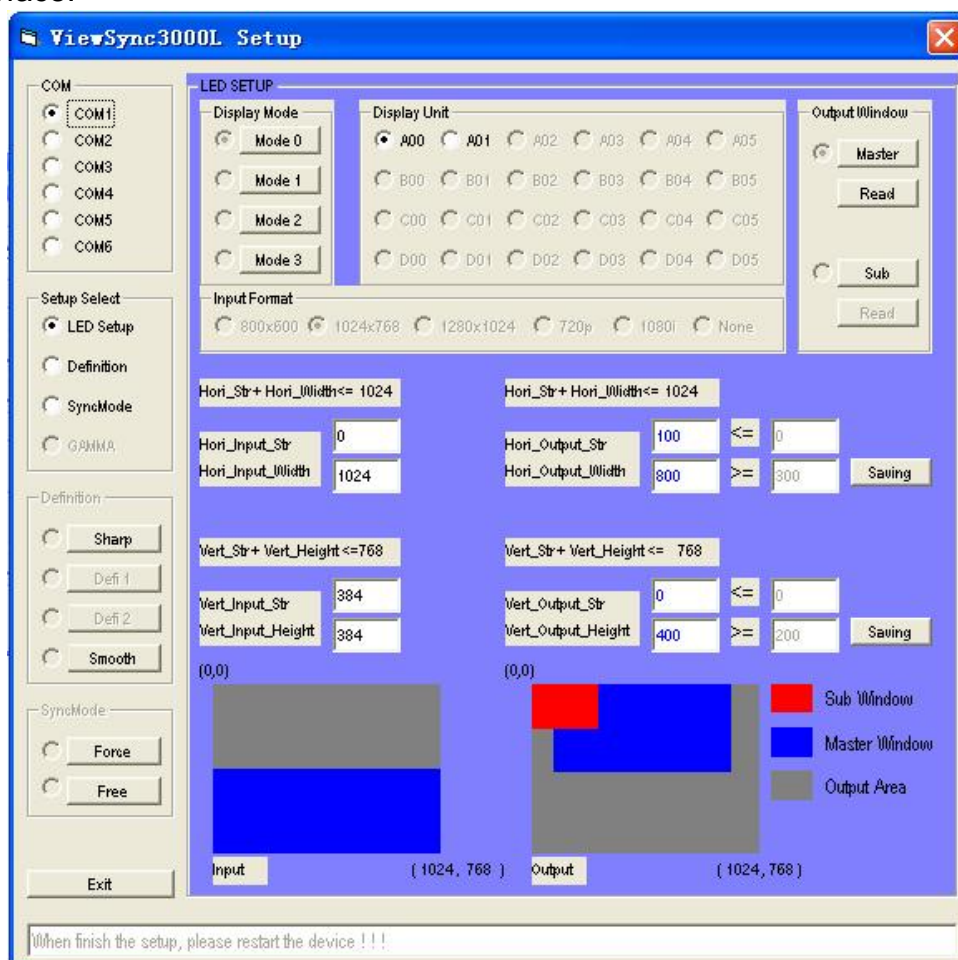


Figure 10

1) Select COM Port

ViewSync3000LA receives control commands from computer via an RS232 serial bus, user can select appropriate COM port No. in this option column, as shown in the above figure, **COM1** is selected.

2) Select Setup Options

As shown in Figure 10, there are 4 setup options, the moment please select **LED Setup**

3) Select Display Mode

In **LED SETUP** interface, first select which display mode under which the current settings are saved, **ViewSync3000LA** supports 4 image display modes, user can setup all or less these modes on demand.

Display modes of **ViewSync3000LA** represent the combinational display forms of input image signal in an merged LED display wall that **ViewSync3000LA** drives. In different display modes, each display unit can setup different capture area in input image and the size and location of output image (see Figure below):

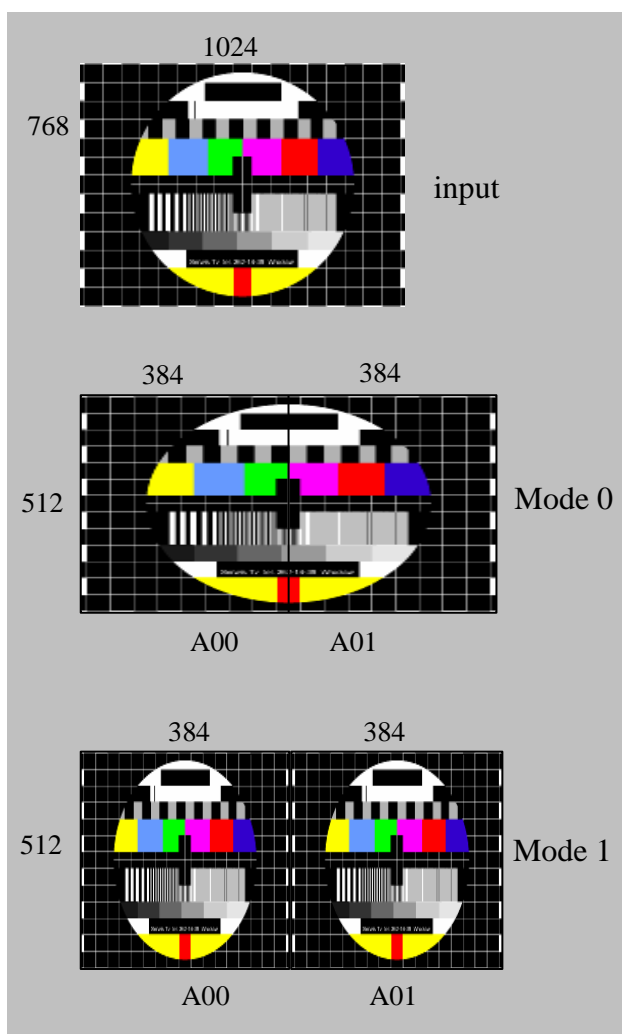


Figure 11

The above figures are an merged LED display wall consists of 2 LED screens, the pixel matrix of each screen is 384×512 , the pixel matrix of merged screen is 768×512 .

The figure shows 2 display modes of merged display wall. Master input image signal is a ellipse of 1024×768 pixels, in **Mode 0**, the two screens A00 and A01 will display the left half and the right half of input image respectively, when they are merged together, the whole frame of input image is completely displayed. The size of input image that A00 output card captured is 512×768 , and this part lies in the left section, the output size of this part of image is 384×512 ; meanwhile, the size of input image that A01 output card captured is 512×768 , and this part lies in the right section, the output size of this part of image is 384×512 too.

In **Mode 1**, both A00 and A01 screens display a complete frame of input image, in this mode, A00 image output card capture the whole input image, while its output size is: 384×512 ; in the meantime, A01 image output card capture the whole input image, its output size is: 384×512 too.

When the setup of the above two modes is finished, user can directly click **Mode 0** or **Mode 1** to shift between the two display modes.

4) Select Display Units

When display mode is selected, the column **Display Unit** in the right of interface will be activated, all the image output card configured in **ViewSync3000LA** can be selected.

5) Select Master Output Window

Master output is the image output window which displays the Master input image. After you have selected image output card to be setup in the column **Display Unit** (as shown in Figure 10, **A00** output card is selected), the column **Output Window** in the right will be activated. The moment, you need to click **Master** button first of all, so that the image output card would output Master input image. When this image output card is switched to output Master input image, the **Read** button below **Master** button will be activated.

Click the **Read** button, first of all, the software will read the input resolution of current Master input image. As shown in Figure 10, the **Input Format** is: **1024×768** .

Next, the software will read the size, location parameters of Master input image that **A00** image output card captured in

current display mode. As shown in Figure 10, the capture area of Master input image is marked in green, whose horizontal width is 512, height is 768, initial coordinate is (0, 0), namely the left half of input image.

In the meantime, the software will also read the size and location of output image of A00 image output card in current display mode, as shown in Figure 10, the area of output image is marked in blue, whose start coordinate is (0, 0), horizontal width is 384, vertical height is 512.

6) Setup of Master Output Window

After you have clicked the Master output **Read** button, both the size and location parameters of image input and output windows will be activated, the moment you can set parameters as per engineering requirements. In general, first set the horizontal start position and horizontal width of image input and output windows, then click the **Save** button in the right, so as to effect and save the new horizontal parameters.

After the setup of horizontal parameters is finished, user can set vertical start position and vertical height of image input and output windows, and **Save** them.

7) Select Sub-output Window

Sub-output window is the image output window which displays the Sub-input image. Click **Sub** button in the option column of **Output Window**, so that the image output card would output Sub-input image, When this image output card is switched to output Sub-input image, the **Read** button below **Sub** button will be activated.

Click the **Read** button, first of all, the software will read the input format of current Sub-input image signal. As shown in Figure 12, the **Input Format** is: **1024×768**.

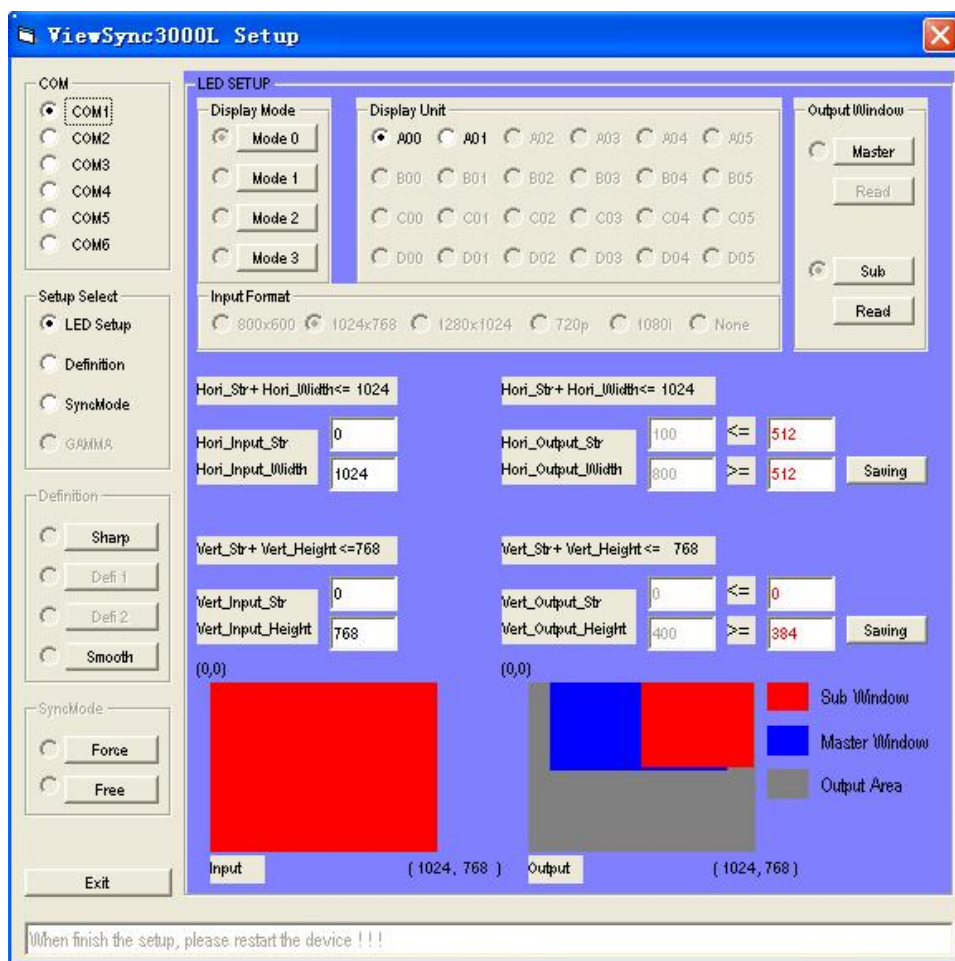


Figure 12

Next, the software will read the size, location parameters of Sub-output image that A00 image output card captured in current display mode. As shown in Figure 12, the capture area of Sub-input image is marked in red, whose horizontal width is 1024, height is 768, start coordinate is (0, 0), namely the whole frame of Sub-input image is captured.

In the meantime, the software will also read the size and location of output image of A00 image output card in current display mode, as shown in Figure 12, the area of output image is marked in red, whose start coordinate is (0, 100), horizontal width is 384, vertical height is 300.

8) Setup of Sub-output Window

After you have clicked the sub output **Read** button, both the size and location parameters of image input and output windows will be activated, the moment you can set parameters as per engineering requirements. In general, first set the horizontal start

position and horizontal width of image input and output windows, then click the **Save** button in the right, so as to effect and save the new horizontal parameters.

After the setup of horizontal parameters is finished, user can set vertical start position and vertical height of image input and output window, and save them.

In general, Sub-output window of image should be situated within Master output window, when Sub-output window is smaller than Master output window, Sub-input image will be overlaid on Master input image as PIP mode, Master input image will be displayed as background (see Figure 12).

When the size and location of Sub-output window are equal to that of Master output window, Master input image and Sub-input image can only be displayed in turn.

9) Setup of All Display Units

Above steps 5)-8) complete the alignment parameter setup of the unit **A00** in **Mode 0**. While in **Mode 0**, we need continue setting other displaying units, such as the unit **A01** as shown in Figure 2, its steps are the same with that of **A00**.

Repeat steps 5)-8), till the alignment parameter setup of all displaying units are finished. Now, the setup of display mode in **Mode 0** is finished.

10) Setup of More Display Modes

Above steps 3)-9) complete the setup of **Mode 0**, repeat steps 3)-9), we can setup more display modes.

3. Synchronization Mode Setup


The operation software provides **Force** and **Free** sync modes. **Viewsync3000LA** needs to be set up as **Force** sync mode, click button "Force" as below:

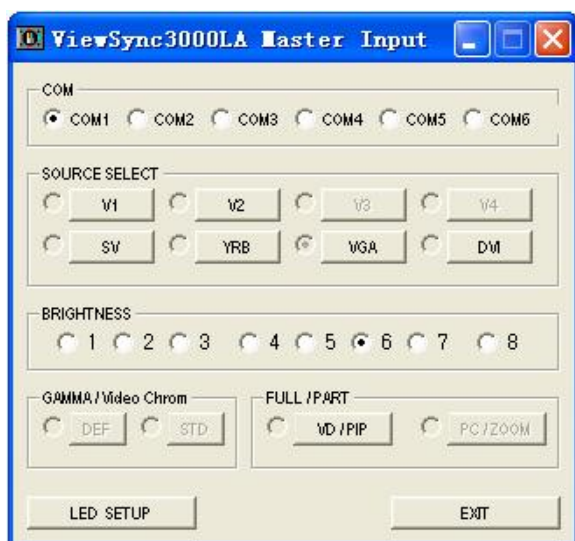


Figure13


4. Rambling PIP's Setup of Master Input Image

Master input signal V1, V2, S-Video can be set up as the rambling PIP image and overlaid above the master input YPbPr image, VGA image and DVI image in the random location. The rambling PIP's location and size can be adjusted as per below method.

Run program  ViewSync3kLa822a.exe , enter below operation profile:

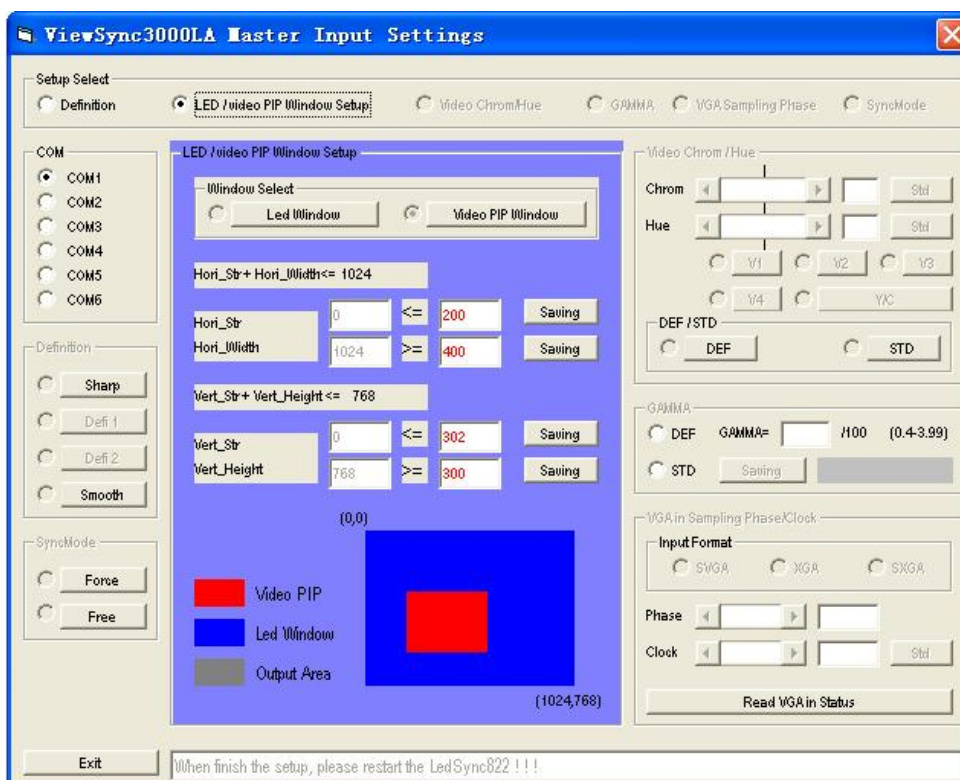


The functions of COM, SOURCE SELECT, BRIGHTNESS, VD/PIP (rambling PIP) are identical as the same column in application program **ViewSync3000LA.exe**'s main profile.

Click button  , **input code "123456" in the dialog box, and then enter the master input setup profile:**

1) Control Com Port select

Choose com port which controls the computer in "COM" column. Below figure shows COM1 is chosen.



2) PIP window setup

Engineer users define the size and location of rambling VD/PIP. The video PIP window displays in the random location of LED window. The setup steps are as bellows:

- ◇ select button “LED/Video PIP Window setup” in column “setup select”
- ◇ Click button “Led window” in column “Window select” and read the size and location parameter of the current window. **The resolution of full display is 1024*768.**
- ◇ Click button “Video PIP window” in column “Window select”, setup the size and location of video rambling PIP. Read the size and location parameter of it simultaneously.
- ◇ Red zone stands for Video PIP image. The four red input columns on the right is used to input the horizontal start bit, horizontal width, vertical start bit, vertical height. The corresponding “saving” button on the right is used to save the input parameter. The size and location of video PIP is setup in this way.

IV. Specifications

Model/Configs		ViewSync3033L (9 Oupputs + 9 Sub_Inputs)	
Inputs			
Master Inputs	Nums/Type	1×VGA (RGBHV) 1×DVI 1×YPbPr 2×CVBS 1×Y/C(S-Video)	
Sub Inputs	Nums/Type	One Sub_Input	9 Sub_Inputs
		1×VGA (RGBHV) 1×CVBS (V2s) 1×Y/C(S-Video)	9×VGA (RGBHV) 9×CVBS (V2s) 9×Y/C (S_Video)
Video system		PAL/NTSC	
CVBS Scope/Impedance		1V (p_p) / 75Ω	
Y/C Scope/Impedance		Y: 0.7V (p_p) / 75Ω, C: 0.35V (p_p) / 75Ω	
YPbPr resolution		720p@60Hz, 1080i@60Hz	
VGA/DVI resolution		1280×1024@60Hz , 1024×768@60Hz , 800×600@60Hz	
VGA Scope/Impedance		0.7 V (p_p) / 75Ω	
Connectors		VGA: 15pin D_Sub(female) DVI: 24+1 DVI_D CVBS: BNC YPbPr: BNC Y/C: 4pin mini DIN(female)	
Outputs			
Nums/Types		9×DVI_I(VGA+DVI)	
VGA/DVI resolution		1024×768@60Hz	
VGA Scope/Impedance		0.7 V (p_p) / 75Ω	
Connectors		DVI_I: 24+1 DVI_I	
Others			
Control		RS 232	
Power		200-240VAC 50/60Hz 300W max	
Operating Temp		5-40 °C	
Humidity		15-85%	
Size		4U (high) ×480mm (wide) ×510mm (deep)	
Weight		18 Kg	