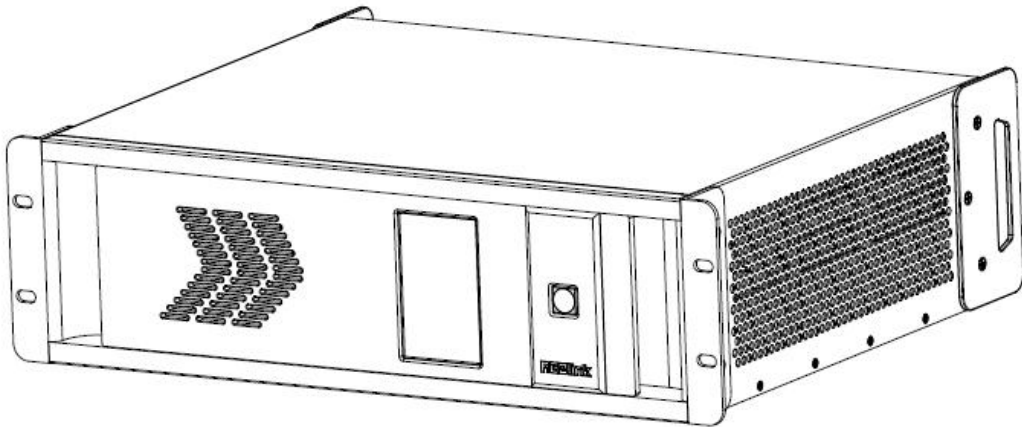


# X3



## USER MANUAL

**RGBlink<sup>®</sup>**

Article No: RGB-RD-UM- X3 E001  
Revision No: V1.5

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**Thank you for choosing our product!**

**This User Manual is designed to show you how to use this video processor quickly and make use of all the features. Please read all directions and instructions carefully before using this product.**

## *Declarations*

### FCC/Warranty

#### **Federal Communications Commission (FCC) Statement**

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, in which case the user will be responsible for correcting any interference.

#### **Guarantee and Compensation**

RGBlink provides a guarantee relating to perfect manufacturing as part of the legally stipulated terms of guarantee. On receipt, the purchaser must immediately inspect all delivered goods for damage incurred during transport, as well as for material and manufacturing faults. RGBlink must be informed immediately in writing of any complains.

The period of guarantee begins on the date of transfer of risks, in the case of special systems and software on the date of commissioning, at latest 30 days after the transfer of risks. In the event of justified notice of compliant, RGBlink can repair the fault or provide a replacement at its own discretion within an appropriate period. If this measure proves to be impossible or unsuccessful, the purchaser can demand a reduction in the purchase price or cancellation of the contract. All other claims, in particular those relating to compensation for direct or indirect damage, and also damage attributed to the operation of software as well as to other service provided by RGBlink, being a component of the system or independent service, will be deemed invalid provided the damage is not proven to be attributed to the absence of properties guaranteed in writing or due to the intent or gross negligence or part of RGBlink.

If the purchaser or a third party carries out modifications or repairs on goods delivered by RGBlink, or if the goods are handled incorrectly, in particular if the systems are commissioned operated incorrectly or if, after the transfer of risks, the goods are subject to influences not agreed upon in the contract, all guarantee claims of the purchaser will be rendered invalid. Not

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included in the guarantee coverage are system failures which are attributed to programs or special electronic circuitry provided by the purchaser, e.g. interfaces. Normal wear as well as normal maintenance are not subject to the guarantee provided by RGBlink either.

The environmental conditions as well as the servicing and maintenance regulations specified in this manual must be complied with by the customer.

## Operators Safety Summary

The general safety information in this summary is for operating personnel.

### **Do Not Remove Covers or Panels**

There are no user-serviceable parts within the unit. Removal of the top cover will expose dangerous voltages. To avoid personal injury, do not remove the top cover. Do not operate the unit without the cover installed.

### **Power Source**

This product is intended to operate from a power source that will not apply more than 230 volts rms between the supply conductors or between both supply conductor and ground. A protective ground connection by way of grounding conductor in the power cord is essential for safe operation.

### **Grounding the Product**

This product is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting to the product input or output terminals. A protective-ground connection by way of the grounding conductor in the power cord is essential for safe operation.

### **Use the Proper Power Cord**

Use only the power cord and connector specified for your product. Use only a power cord that is in good condition. Refer cord and connector changes to qualified service personnel.

### **Use the Proper Fuse**

To avoid fire hazard, use only the fuse having identical type, voltage rating, and current rating characteristics. Refer fuse replacement to qualified service personnel.

### **Do Not Operate in Explosive Atmospheres**

To avoid explosion, do not operate this product in an explosive atmosphere.

## Installation Safety Summary

### **Safety Precautions**

---

For all X3 processor installation procedures, please observe the following important safety and handling rules to avoid damage to yourself and the equipment.

To protect users from electric shock, ensure that the chassis connects to earth via the ground wire provided in the AC power Cord.

The AC Socket-outlet should be installed near the equipment and be easily accessible.

## **Unpacking and Inspection**

Before opening X3 processor shipping box, inspect it for damage. If you find any damage, notify the shipping carrier immediately for all claims adjustments. As you open the box, compare its contents against the packing slip. If you find any shortages, contact your sales representative. Once you have removed all the components from their packaging and checked that all the listed components are present, visually inspect the system to ensure there was no damage during shipping. If there is damage, notify the shipping carrier immediately for all claims adjustments.

## **Site Preparation**

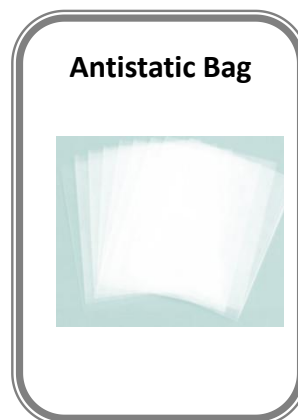
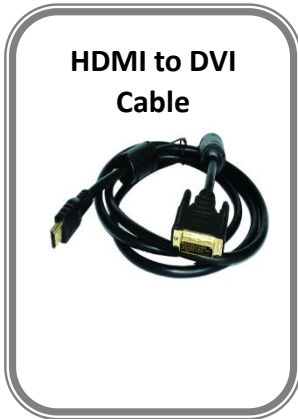
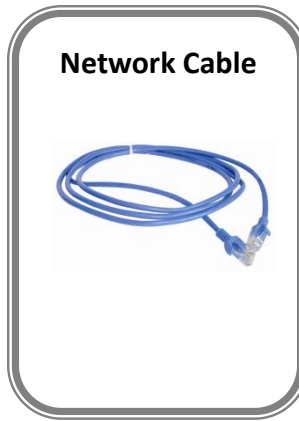
The environment in which you install your X3 should be clean, properly lit, free from static, and have adequate power, ventilation, and space for all components.

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# Chapter 1 Your Product

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## 1.1 In the Box



**Note:**

AC Power Cable supplied as standard according to destination market.

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## 1.2 Product Overview

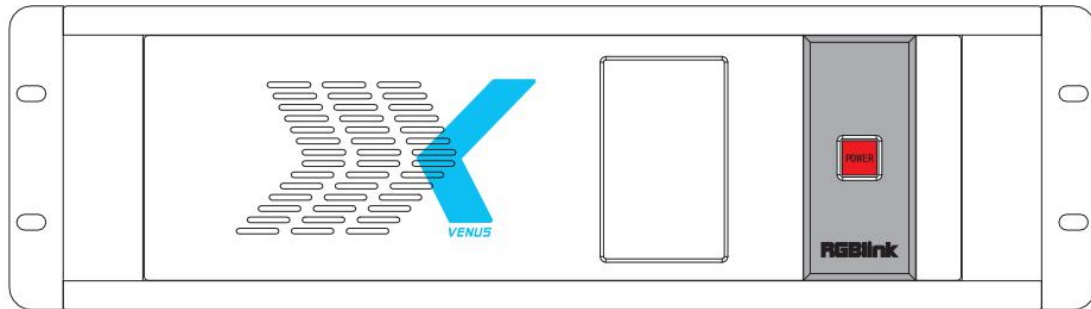
X3 is an HDCP-compliant, scalable, expandable videowall processor configurable to support a variety of input, output and windowing capabilities. It features high performance video scaling capable of producing very high quality images.

X3 offers six card cages that support various combinations of input and output cards for DVI, VGA, HDMI, CVBS, SDI and USB (for media files play) or video sources. Hundreds of additional video or graphic sources can be input to the X3 using the RGBlink AVDXP Matrix and Router. Multiple X3 can be cascaded to create very large display arrays.

A dedicated, high-speed video/graphic bus maintains real-time performance even under heavy loading of inputs. Compared with other videowall processors, X3 extends two main important performance for presentation application. One is seamless switching between the inputs, the other comes with local control panel option. These advantages make the X3 ideal for all types for all types of surveillance, presentation, and visualization applications, whether traffic, security, military, or process control.

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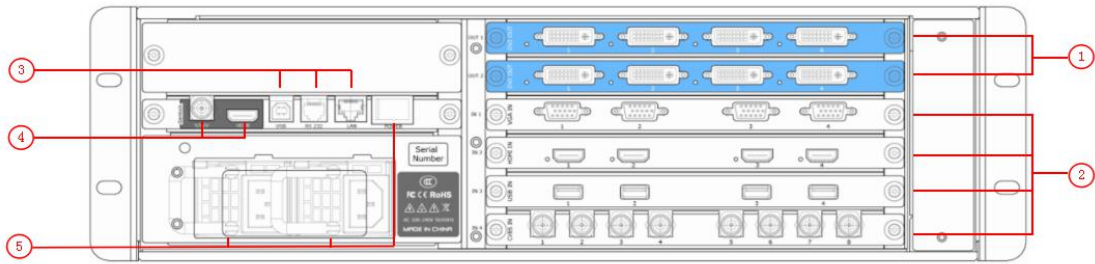
## 1.2.1 Front Panel



1	<b><u>OLED Panel</u></b> Show the input shot and output slot information, device status, COM. Version, IP address and serial address.
2	<b><u>POWER</u></b> Power button, long push the button, the device can be boot up. Under normal running state, push the button once, the info shown on OLED can be refreshed once ; long push the button, the OLED will pop up a confirm box, release the power button, push the power again before the confirm box disappears, and the power can be turned off.



## 1.2.2 Rear Panel



Chassis Module Structure			
1	2 output module slots	4	Genlock interface
2	4 input module slots	5	Power Switch and Power Module
3	Communication ports		

### Input Interface

1	4 input slots, supports input modules including DVI, VGA, HDMI, USB, CVBS, 4K@60HZ module and 12G-SDI. For details, please refer to Specification at the end of this document.
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### Output Interface

2	2 output module slots, support DVI, SDI and HDMI 2.0 signals. For details, please refer to Specification at the end of this document.
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### Control Interface

3	USB Interface	Connect the window control program or device upgrade.
	RS232 Interface	Connect the window control program or device upgrade.
	LAN Interface	Connect the network cable.

### Genlock Interface

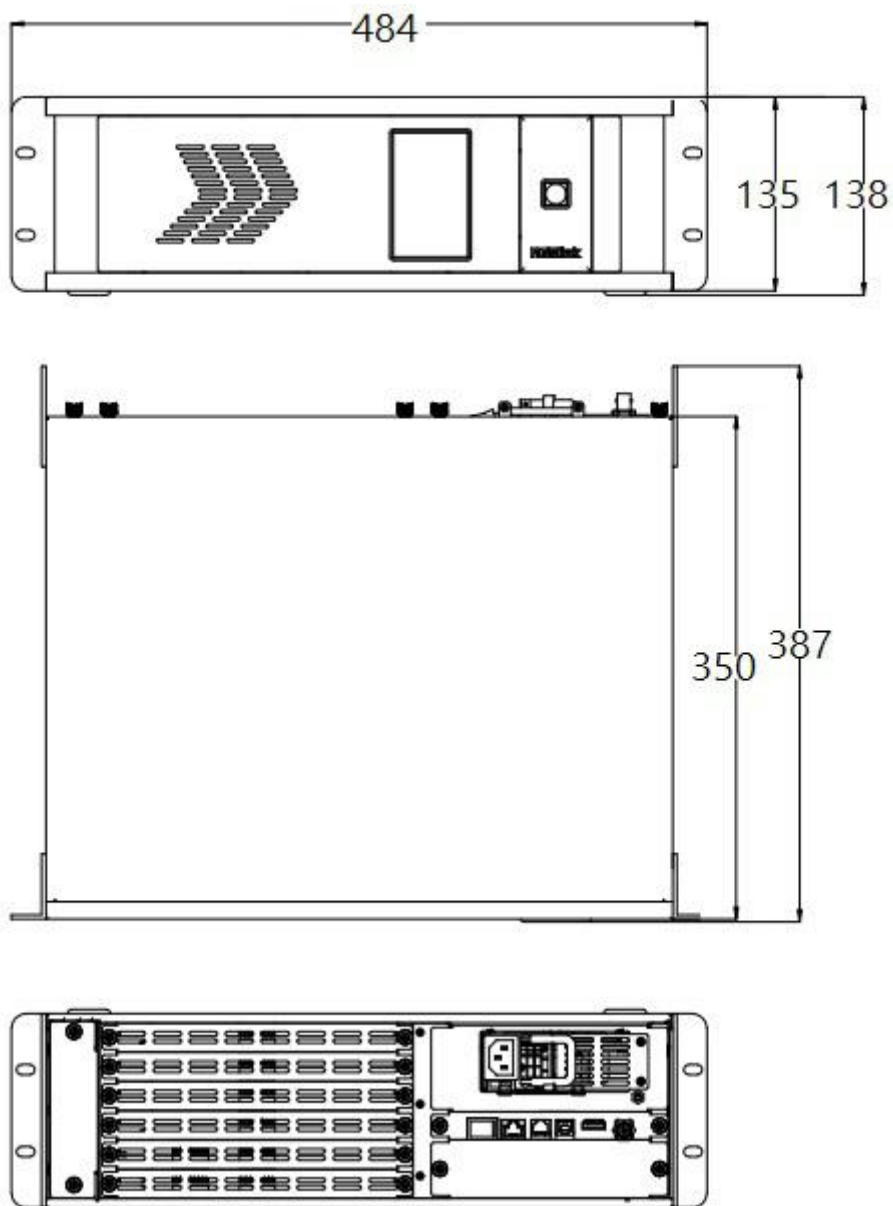
4	Includes 1 Genlock input and 1 HDMI output. <u>Genlock Inout</u> Input signal from the controller or signal generator and other device. <u>HDMI Input</u> Connect to the display device, video processor or matrix.
---	---

## Power Connection

5	Power Switch	Connect the windows control program and device upgrade.
	Power Interface	AC:100-240V Power: Max 65W Power Supply Interface:IEC-3

## 1.2.3 Dimension

Following is the dimension of x3 for your reference:



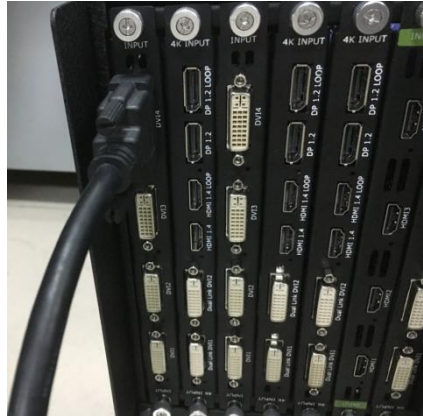
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# Chapter 2 Installing Your Product

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## 2.1 Plugging in Signals

Connect signals to the product (ensure all the device are all power off first).Tighten connector screws/locks where provided.



## 2.2 Plugging in Main Power

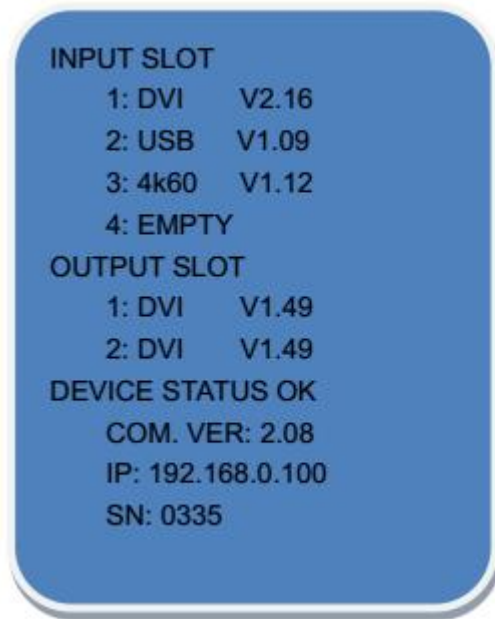
Connect IEC cable to device and plug into wall socket. Turn on power at wall socket.

## 2.3 Turning on Your Product

Turn on the power switch on the real panel.

OLED display will show as below,completing initialization before loading the latest settings and input/output configuration.





The system begins to work, and the OLED module shows the input slot and output slot information, device status, COM. Versions. IP address and serial number.

## 2.4 Connect X3 and Computer

Use network cable to connect the X3 and computer as the following picture show:



Set the IP address of the computer and make sure the computer and the device are in same network range. IP address of the device is available on the OLED screen after it is powered on. For example if the IP of the device is 192.168.110.1, just make sure the IP of the computer is in 192.168.xxx.x, but not exact the same as the device.

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# Chapter 3 Using Your Product

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## 3.1 XPOSE Installation

### Environment Requirements:

Processor: 1 GHz or above 32 bit or 64 bit processor

Memory: 2 GB or more

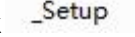
Graphics: Support DirectX 9 128M or above (open AERO effect)

Hard disk space: Above 16G (primary partitions, NTFS format)

Monitor: Resolution must be 1280 x720 pixel or above (it can not display normally if the resolution is lower than 1280 x720)

Operating system: Windows 7 or above (full version, not Ghost version or compact version)



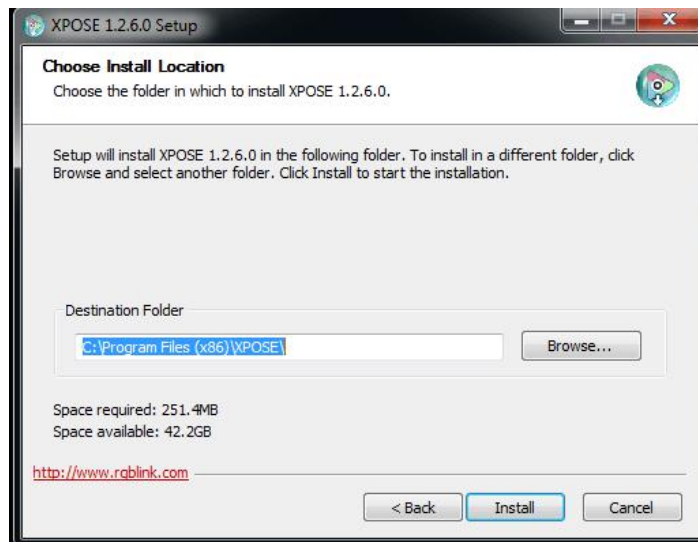
Double click  icon, it will pop-up the installer language box, select the language, for example, select “English”, and click “OK” to confirm.



Click “Next” to install:



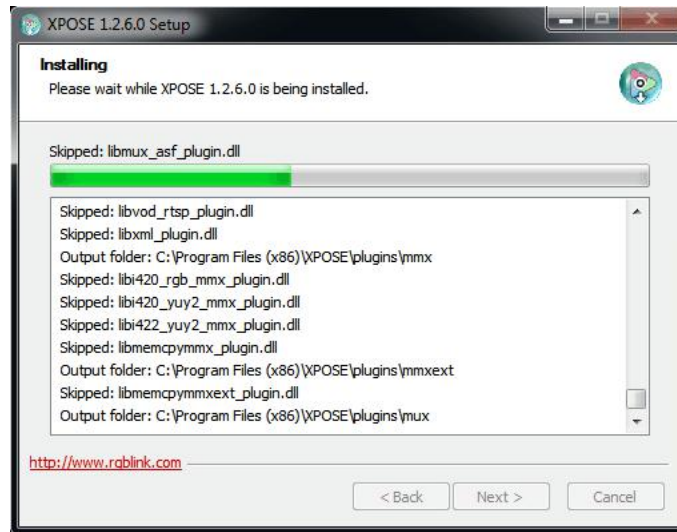
Select "Browse..." to select the XPOSE software install location:



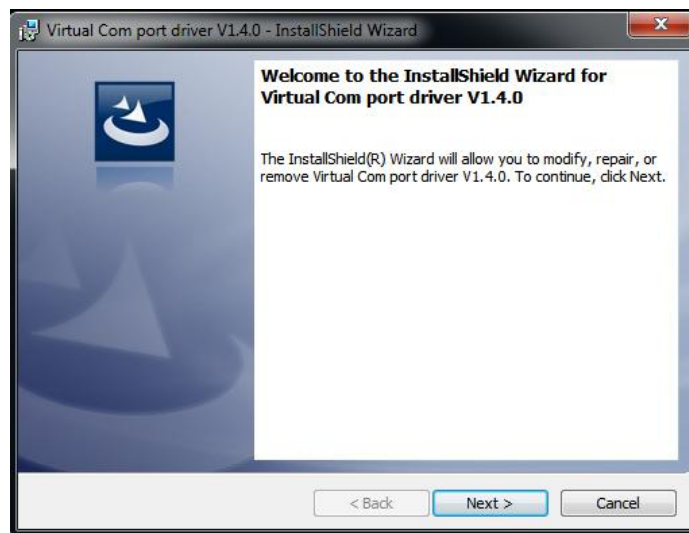
**Note:**

User should get the rights in "Roles Management" when install the software to disk C if the system is Windows 7 or above.

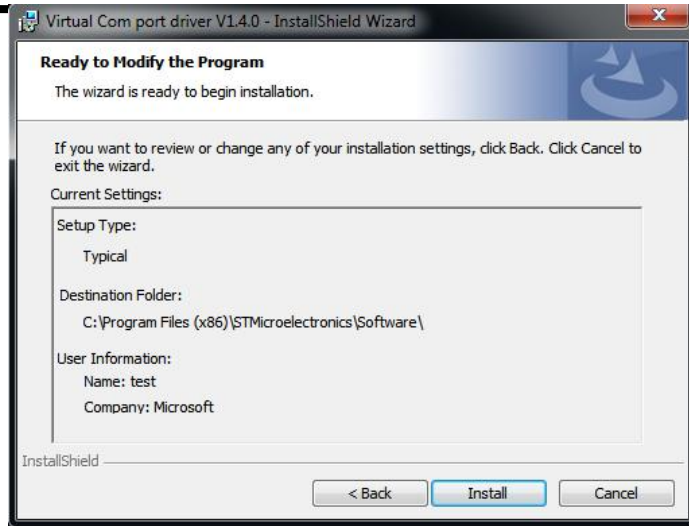
Click "Install":



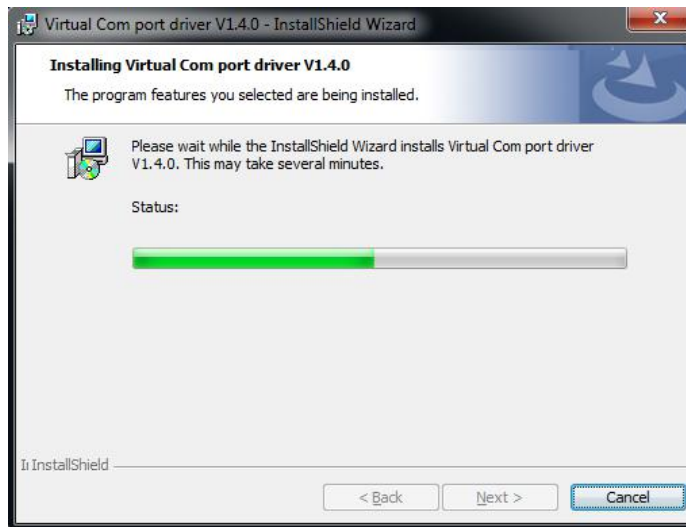
During installation, it will pop up the window of InstallShield Wizard for Virtual Com port:



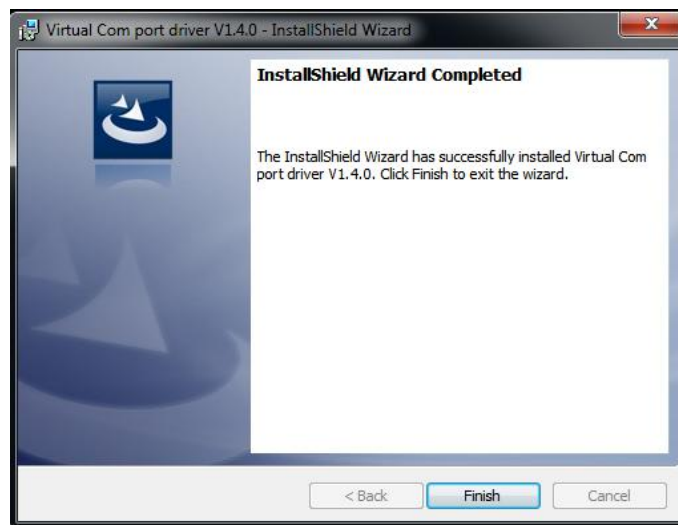
If user install the XPOSE software for the first time, click "Next



Then click “Install”, as shown in the figure below:



Click “Finish” and complete the installation, as shown in the figure below:



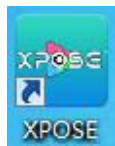
Click “Finish” and is ready to run the XPOSE :

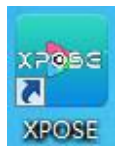


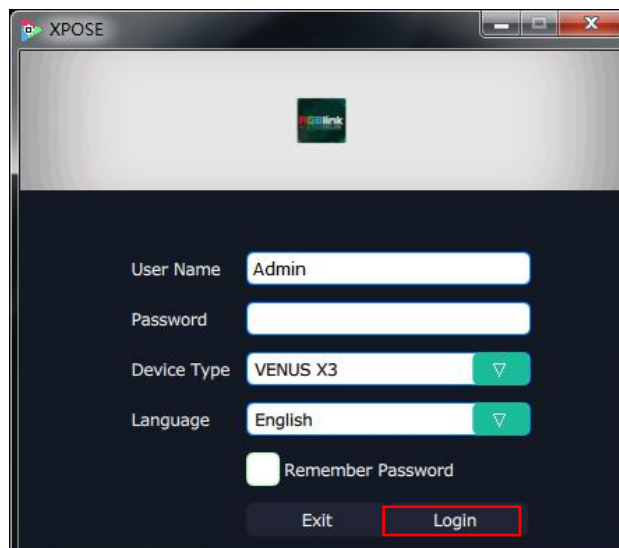


## 3.2 XPOSE Controls X3

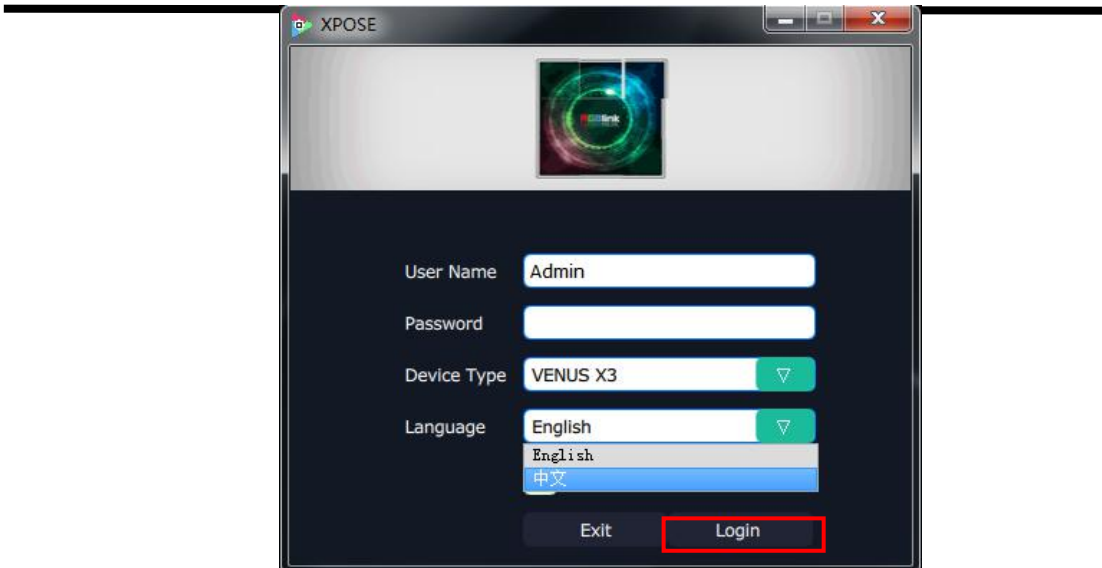
### 3.2.1 Login in XPOSE



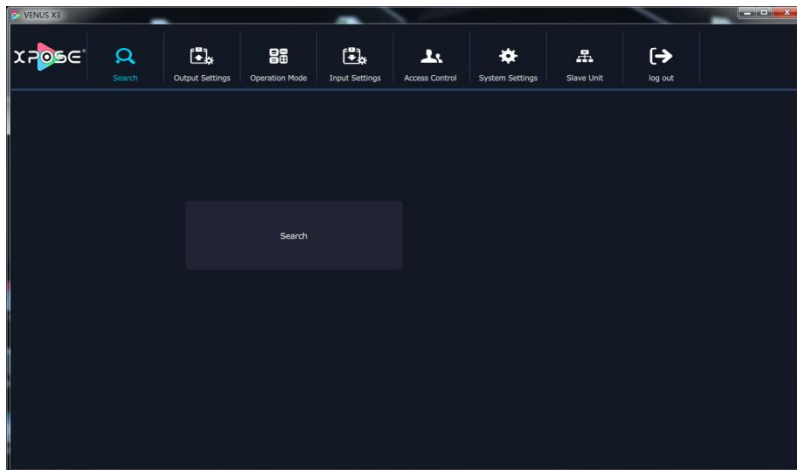
Double click the icon  on the desktop. Log in interface will be enter after opening, the user name is Admin, and there is no password, select “VEUNS X3”, and enter the XPOSE by clicking “Login”.



If user want to change the language to Chinese, click the drop down arrow after “Language” and select “Chinese”, as shown in the figure below, then click “Login” to enter into the XPOSE.



X POSE management software interface is shown as follows.

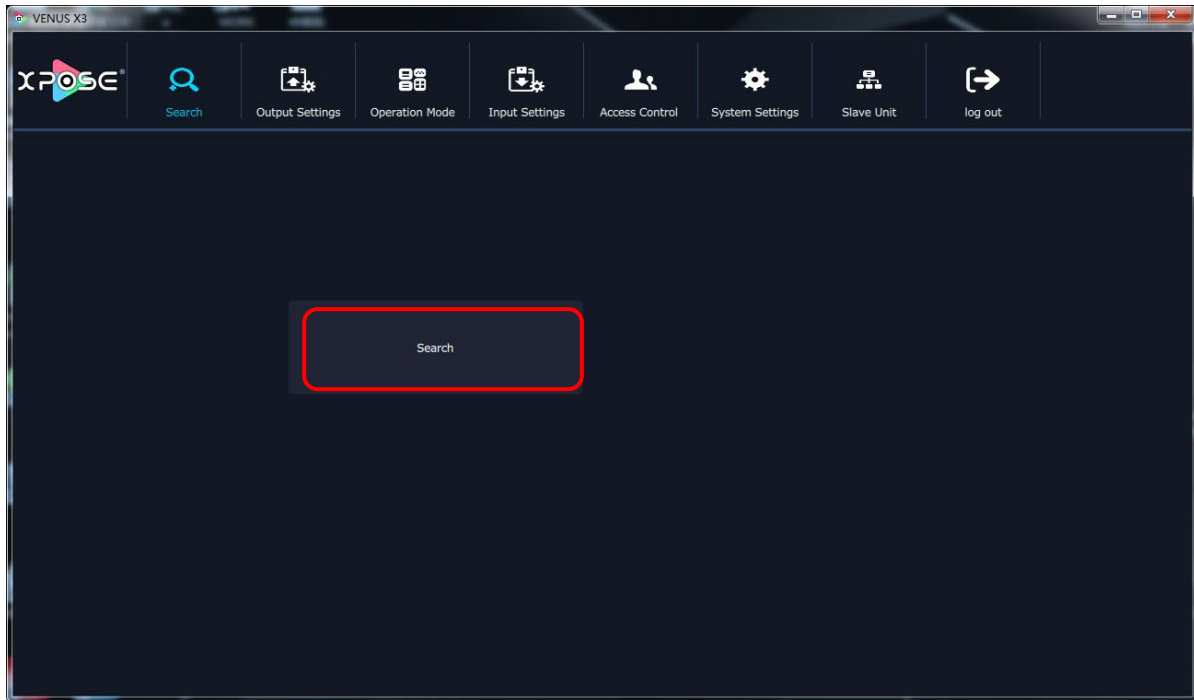


XPOSE management software contains the functions including: Web Links, Search, Output Settings, Operation Mode, Input Settings, Access Control, System Settings, Slave Unit and Logout. In the following parts, we will introduce these in detail.

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### 3.2.2 Connect with the X3

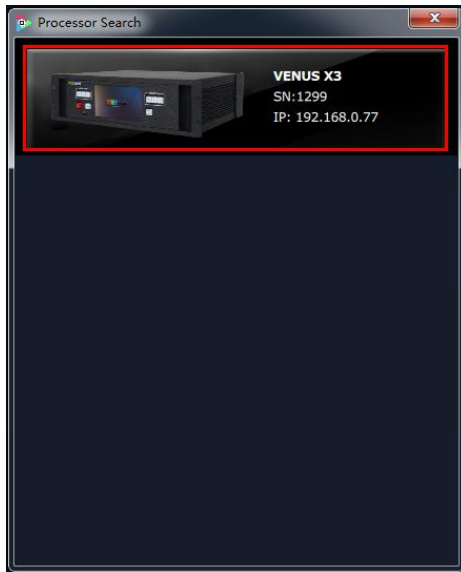
Click the shortcut “Search” on the operation interface.



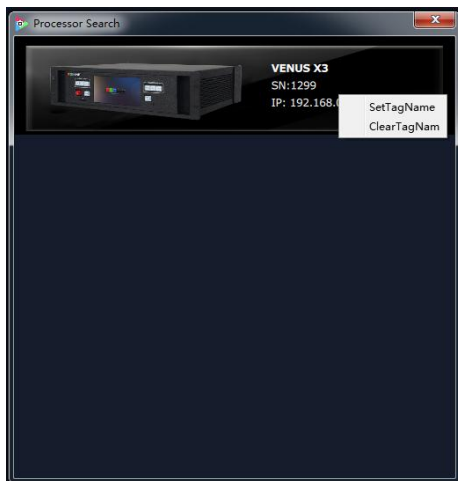
Then it will search the X3, and show the device name, device number and IP after search, as shown in the figure below:



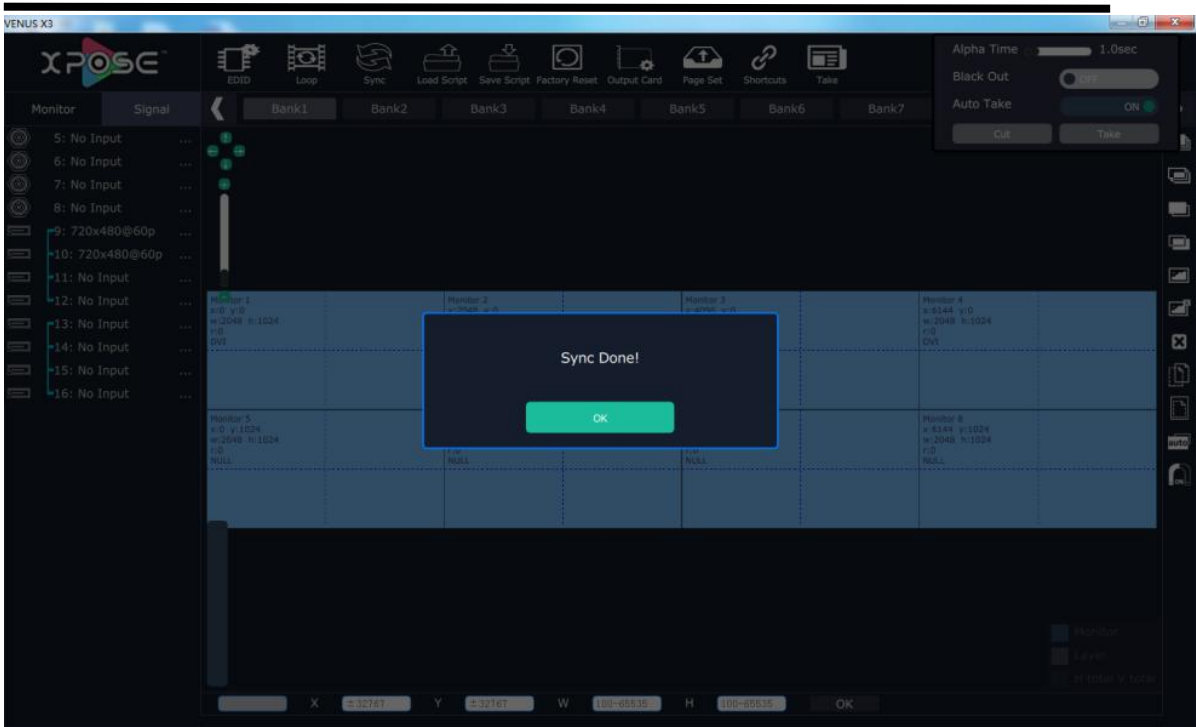
Finally, click the VEUNS X3 to connect, as shown in the figure below:



Note: Right click the device, user can set tag name. The tag will be added behind X3 . It can help users to differentiate the devices when more than one X3 are searched. If select “Clean Tag Name”, the modified tag name will be cleared.

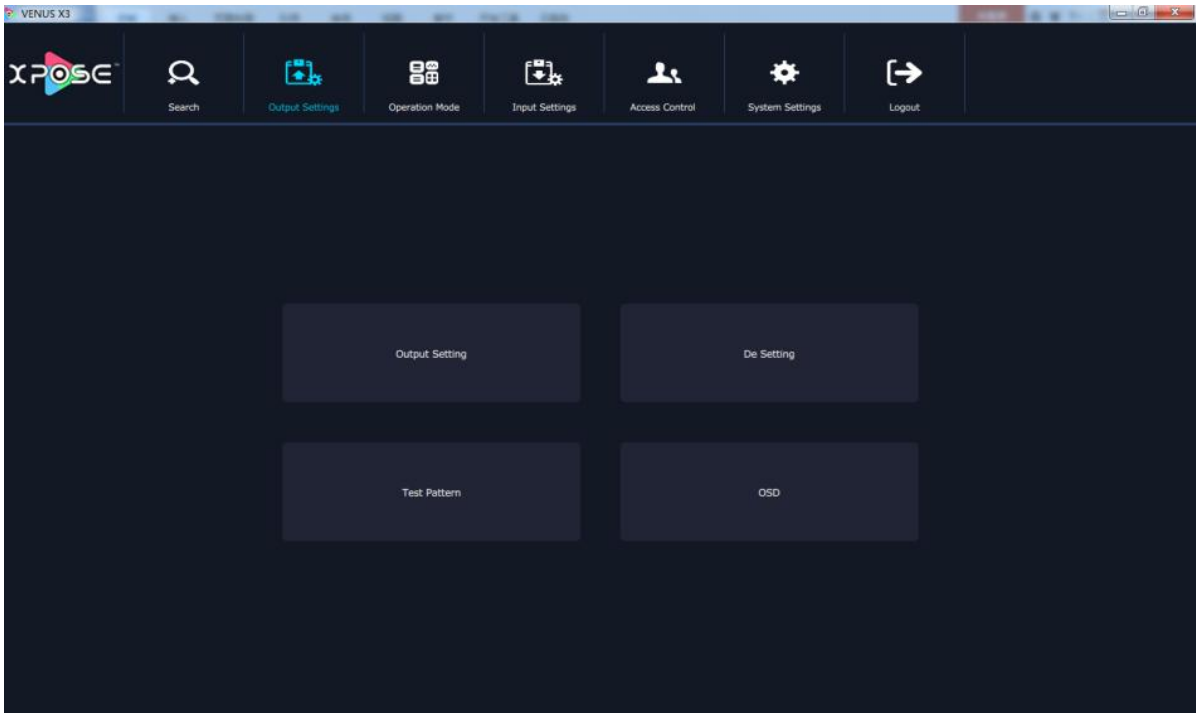


The software will automatically synchronize after connection, as shown in the figure below:



### 3.2.3 Output Settings

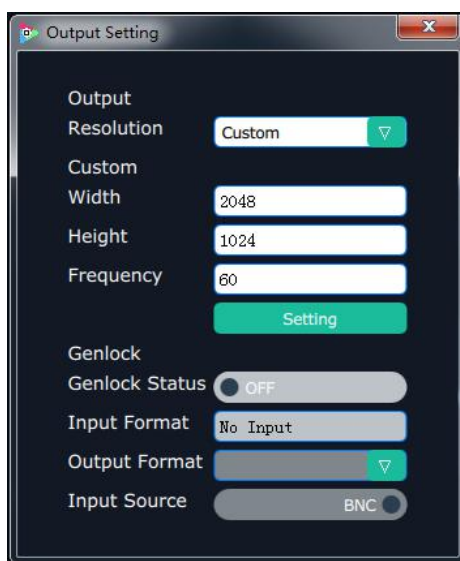
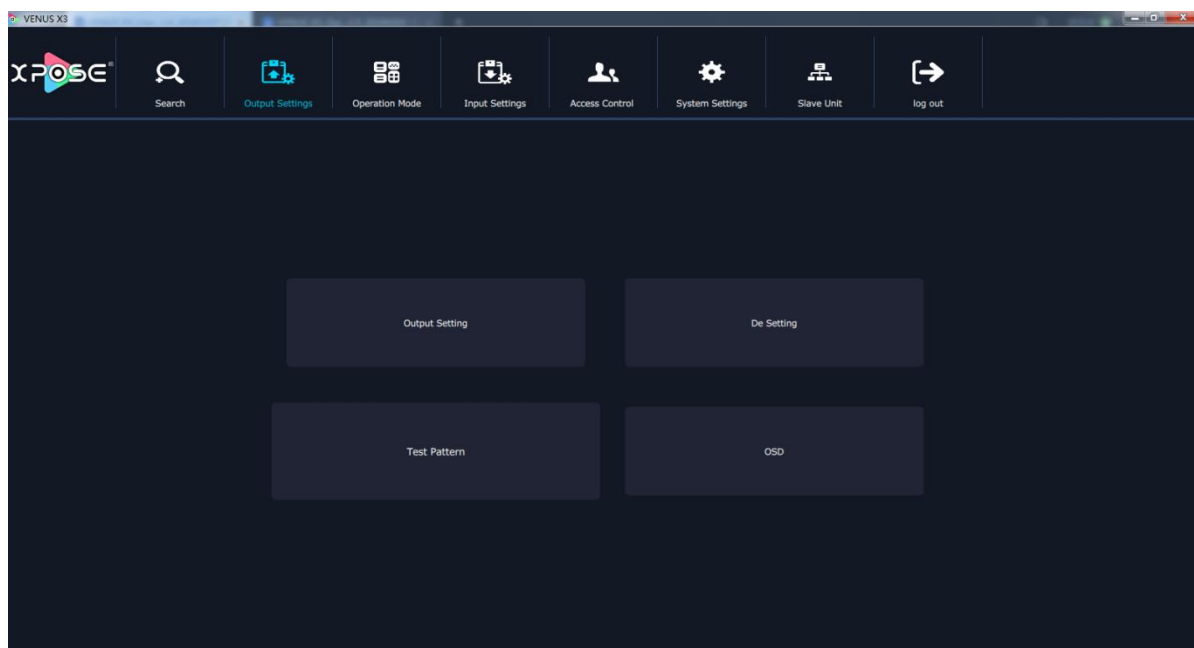
Click the “Output Settings”, and enter the interface as follows:



Output Setting, DE Setting, Test pattern and OSD are included in output settings, specific as:

## Output Setting

Click the “Output Setting”, and pop-up window as follows:



**Output:** Click the drop down arrow after the format, and select the output resolution in the pull-down menus according to actual need.

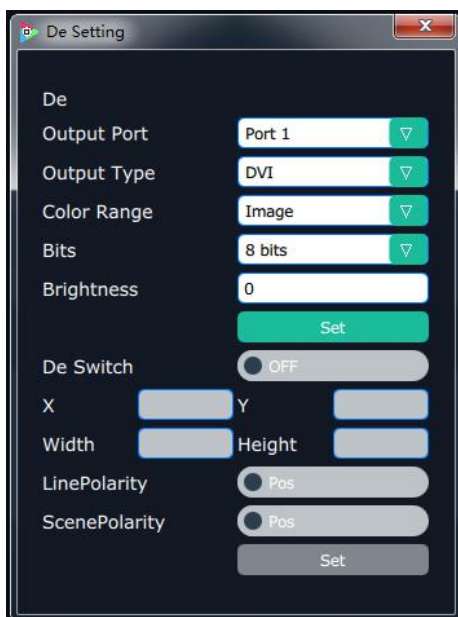
**Custom:** The width, height and frequency can be set if select “Custom” in “Format”. Click “Setting” to confirm.

**Genlock:** Enable or disable the genlock function by sliding the genlock switch. If select “ON”, the output resolution will be same with the resolution that selected. HDMI or BNC can be selected in “Input Source” by sliding the switch.

---

## DE Setting

Click the “DE Setting”, and pop-up window as follows:



**Output Port:** Select one port or all ports.

**Output Type:** Select DVI or HDMI.

**Color Range:** Select image or video.

**Bits:** 8 bits can be selected if the output type is DVI. 8 bits, 10 bits and 12 bits can be selected if the output type is HDMI.

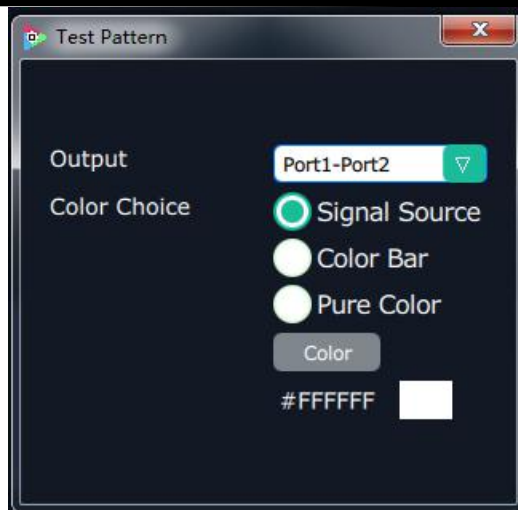
**Brightness:** The brightness adjustment range is between 0~128. Click “**Set**” to confirm.

**De Switch:** Enable or disable the De function by sliding the De Switch.

**De Setting:** The settings for De include X, Y, width, height, line polarity and scene polarity.

## Test Pattern

Click the “Test Pattern”, and pop-up window as follows:



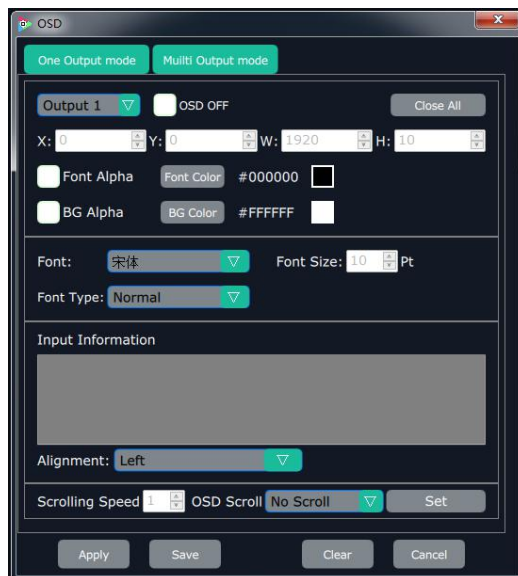
**Output:** User can select any board among the four boards.

**Color Choice:** Signal source, color bar and pure color can be selected.

**#FFFFFF:** Preview the corresponding RGB values and the color.

## OSD

Click the “OSD”, and pop-up window as follows:



**Output Mode:** One output mode or more output mode can be selected. In one output mode, user need to enable the OSD function and select the output first. The operations are as follows:

**Size and Position Adjustment:** The size and position can be adjusted by setting X, Y, W and H.

**Font Setting:** The font, font size, font type and font color can be set. Use can also select font alpha.

**BG Alpha:** Can set the background color or background alpha.

**Input Information:** Input the information that will display in the box.

**Alignment:** Select left, right, H Center, etc.

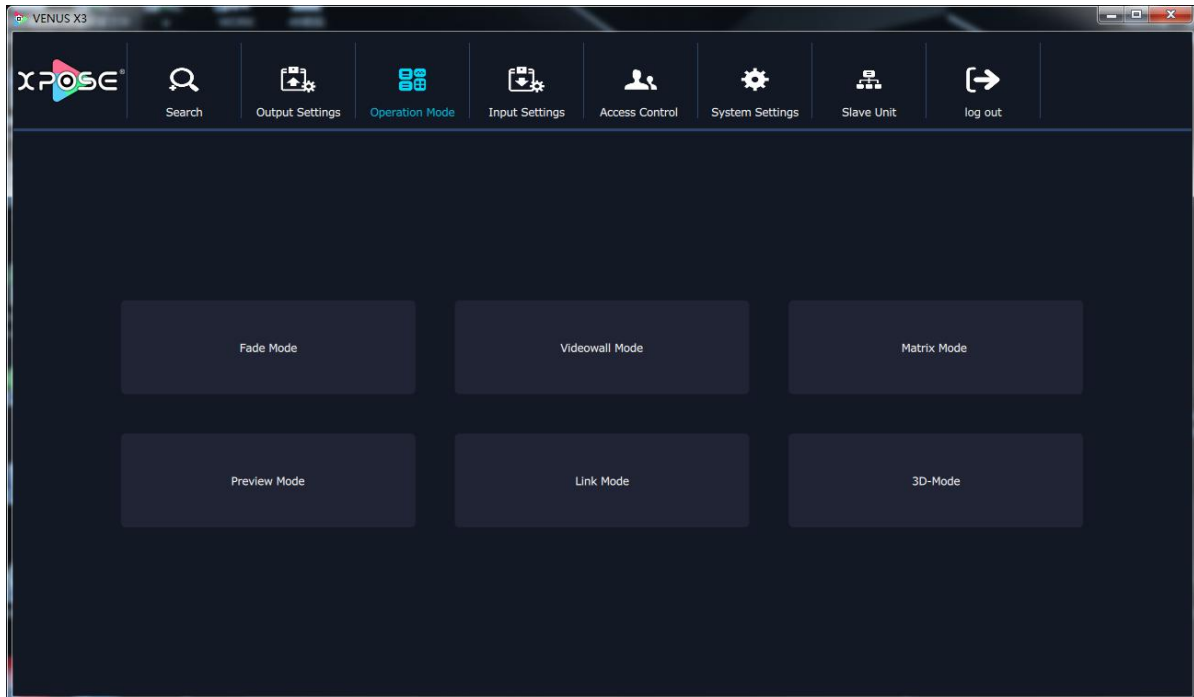
**Scrolling Speed:** The scrolling speed can be set, and the adjustment range is between 1~16.

**OSD Scroll:** Can select no scroll, left scroll and right scroll. Click “**Save**” and “**Apply**” after setting.



## 3.2.4 Operation Mode

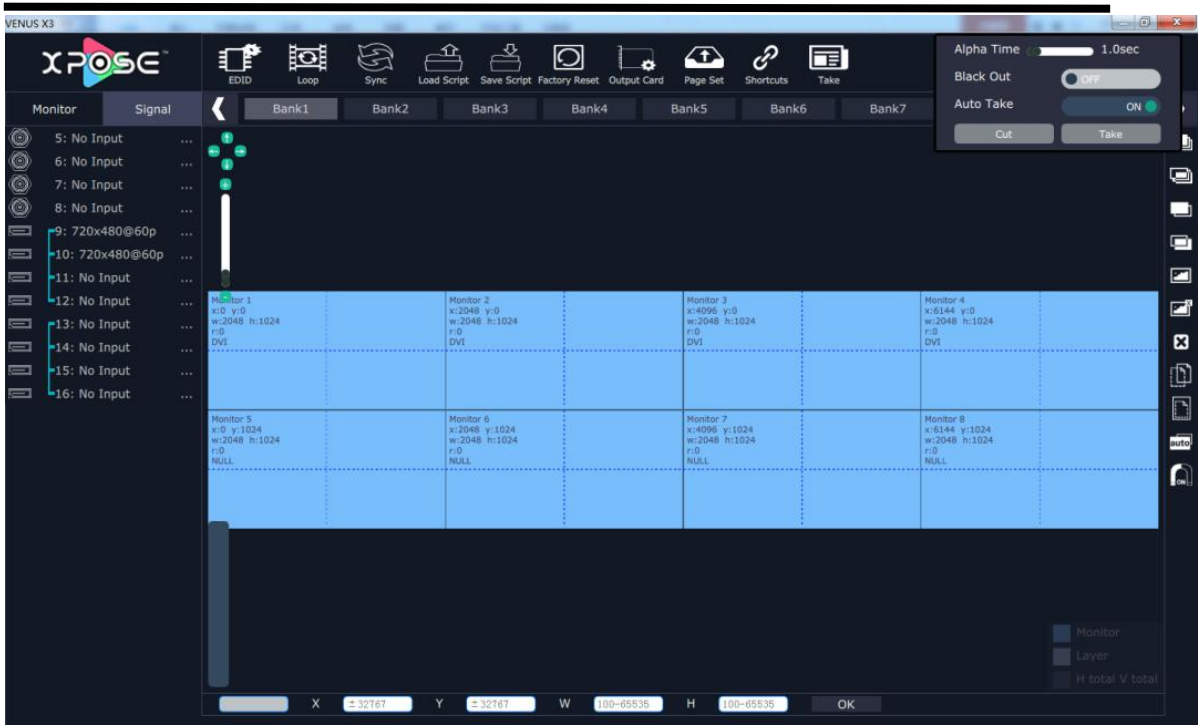
Click the “Operation Mode”, and enter to the interface as follows:



Fade Mode, Videowall Mode, Matrix Mode, Preview Mode, Link Mode and 3D-Mode are included in operation mode, specific as follows:

### Videowall Mode

Click the “Videowall Mode”, and enter to the interface as follows:



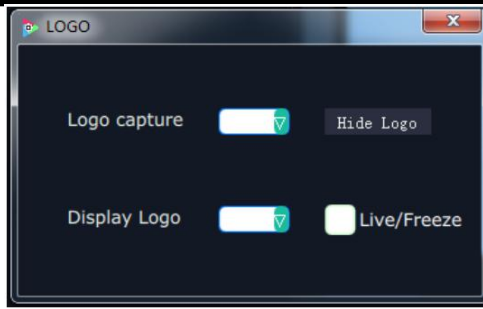
## Signal List

The signal list is shown as follows:

Monitor	Signal
5: No Input	...
6: No Input	...
7: No Input	...
8: No Input	...
9: 720x480@60p	...
10: 720x480@60p	...
11: No Input	...
12: No Input	...
13: No Input	...
14: No Input	...
15: No Input	...
16: No Input	...

It displays the input module type, the quantity of inputs and input format. Right click the input for the following settings:

**LOGO:** Right click HDMI/DVI input, and select "LOGO", it will enter to the LOGO menu items.



LOGO capture: Select the LOGO, there are 10 groups of LOGO. The image is frozen when capture LOGO.

Hide LOGO: Select "Hide LOGO", the LOGO will be hidden.

Display LOGO: Select the number of "Display LOGO".

Live/Freeze: Select "Live/Freeze", the image is frozen. Cancel it, the image is live.

**Change Name:** Select "New Name", and input the new name, click "OK" after setting.



**Set Input Property:** Right click the input and select "Set Input Property", it will enter to the interface as follows:



Scale: Set the X, Y, width and height.

Crop: Crop the left, top, width and height.

Display Mode: Select "Live" or "Freeze".

---

Mirror: Enable or disable the mirror function, default “OFF”.

Bypass Mode: Enable or disable the bypass mode. When select “ON”, the output format will be the same with the input format.

Alpha: Set the alpha, the adjustment range is 0~128.

Sharpness: Set the sharpness, the adjustment range is 0~100.

Brightness: Set the brightness, the adjustment range is 0~100.

Contrast: Set the contrast, the adjustment range is 0~100.

Saturation: Set the saturation, the adjustment range is 0~100.

Color Term: Set the color temp (red, green and blue), the adjustment range is 0~100.

Reset: Select “Reset”, the input property will be recover to factory setting.

**Refresh Signals:** Right click the input and select “Refresh Signals”. If there is signal, it will show the input format, or it will show “No Input”.

**USB Player:** Right click the USB input, and select “USB Player”, it will enter to the USB Player interface, including movie and picture, default play the USB movie.



USB movie player setting: Can select play in order, random, single cycle and all cycle, switch to pre or next, pause or play, and read the movie name, progress bar and time.

USB picture play time: Click the picture, it will display the setting interface, default the time is 0s. Set the switch time, and click “Set”.

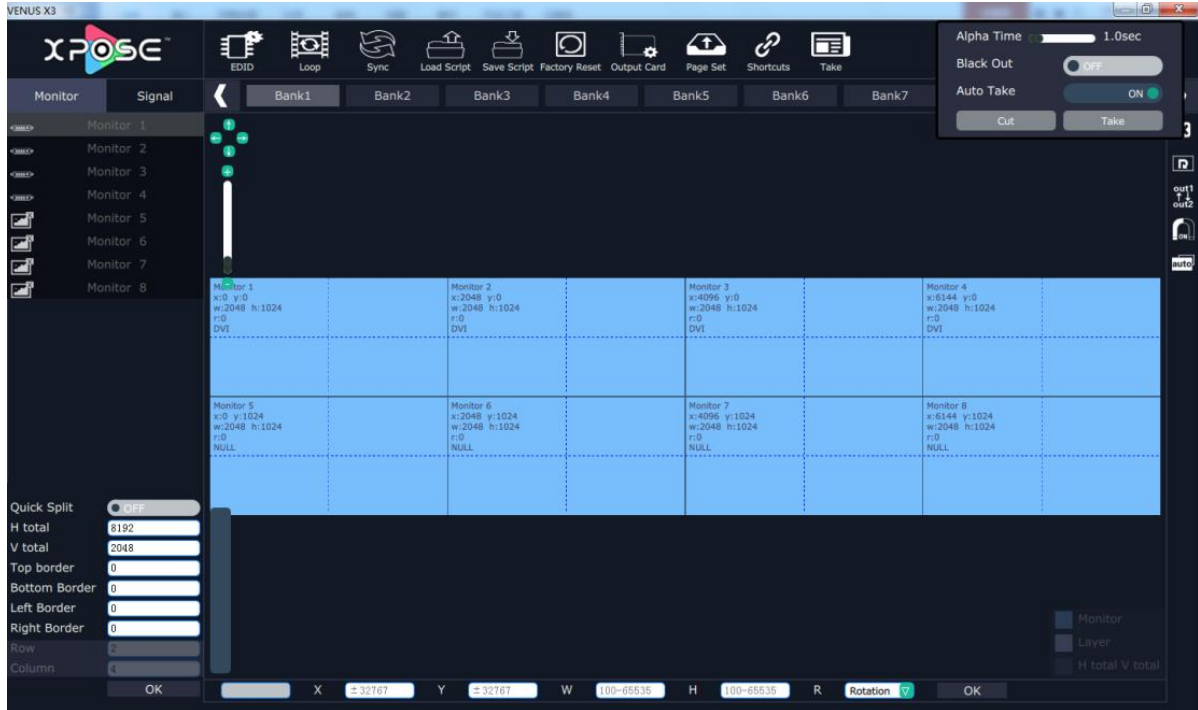
USB picture player setting: Can select play in order, random, single cycle and all cycle, and switch to pre or next, pause or play.

**USB Upgrade:** Put the file in the form of MERGE.bin to the USB disk root directory, and connect to the USB input. Right click the USB input, and select “USB Upgrade” to begin to upgrade USB. (Note: upgrade is only for the USB port that connected, user need to upgrade the four USB ports respectively.)

**Reset Name:** Reset the changed name.

## Output Setting

Click “Monitor” shortcut , it will enter the interface as follows:

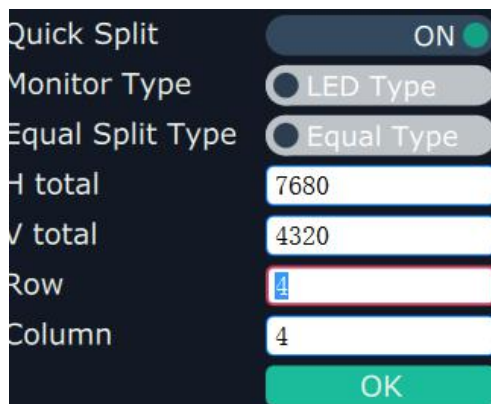


In videowall mode, there are max 16 image in the output interface, group of two outputs, one output module can display 8 images.

**Split Mode:** Default quick split “OFF”. User can enable the quick split function by sliding the switch to “ON”. LED type and LCD type can also be selected by sliding the monitor type switch, specific as follows:

LED Type: Default LED type. In LED type, user can select equal type and unequal split type.

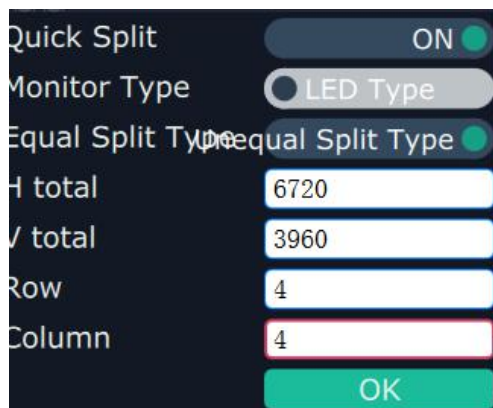
Equal Type: User can custom the H total, V total, row and column, for example, set H total as 7680, V total as 4320, Row and Column as 4, as shown in the figure below:



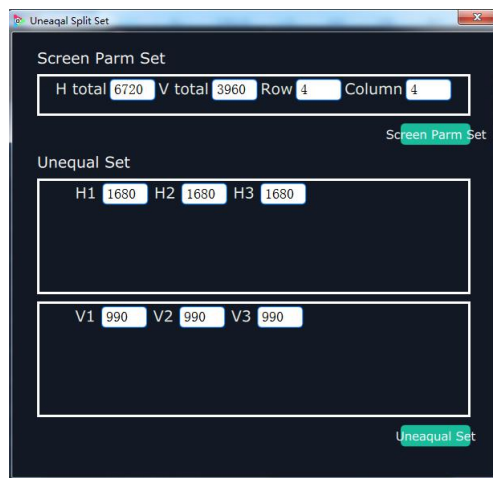
The layout is shown in the figure below:



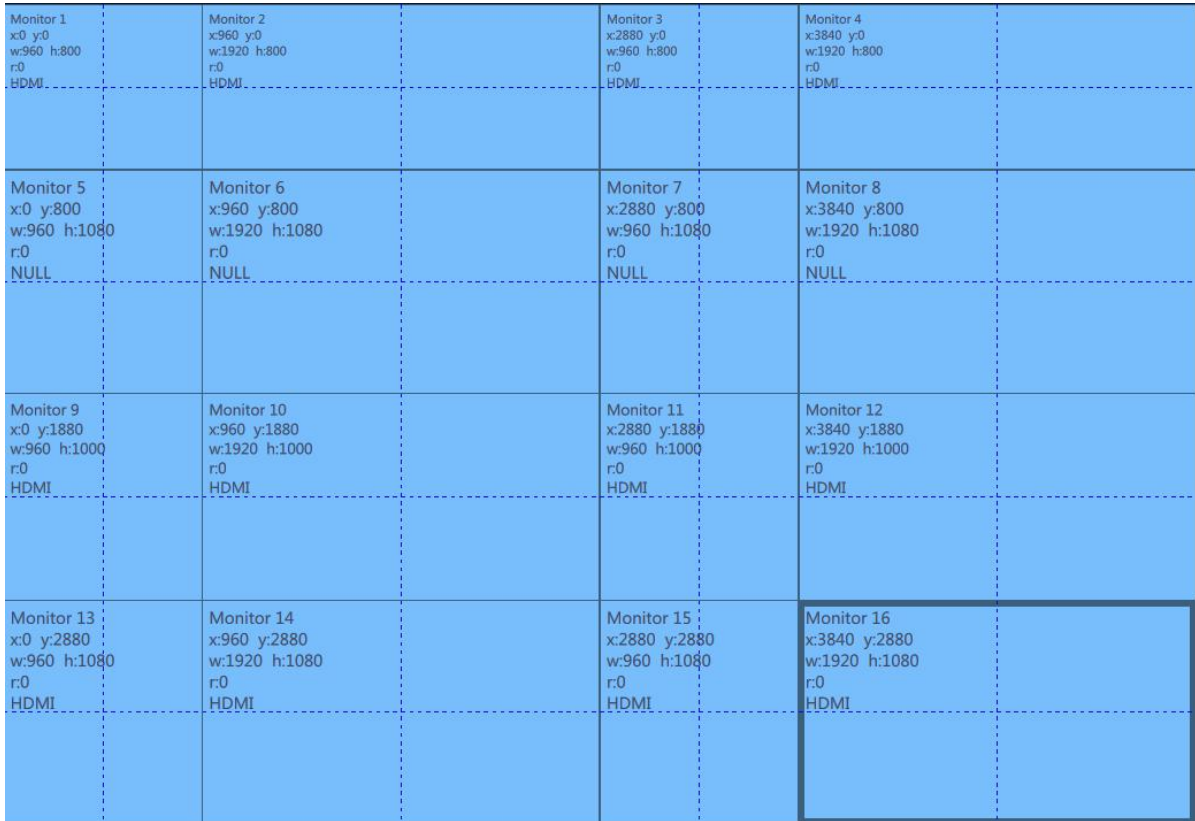
Unequal Split Type: User can custom the H total, V total, row and column, for example, set H total as 6720, V total as 3960, Row and Column as 4, as shown in the figure below:



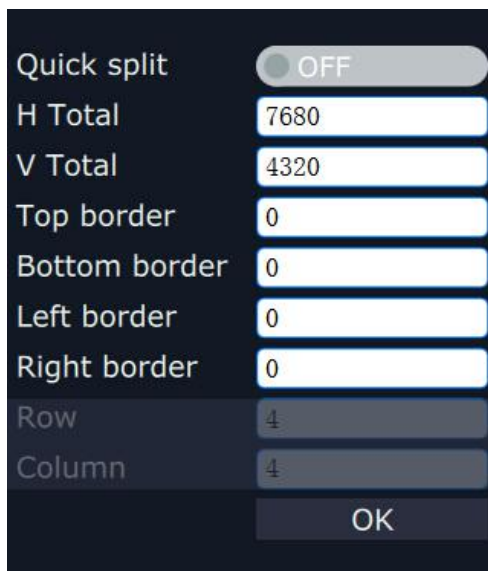
Click "OK", it will pop up windows as below:



Set H1, H2, H3, V1, V2 and V3. For example, set H1 as 960, H2 as 1920, H3 as 960, V1 as 800, V2 as 1080, and V3 as 1000, the layout is shown in the figure below:



LCD Type: Slide the monitor type switch, and select “LCD Type”. Besides H total, V total, row and column, user can custom the top border, bottom border, left border and right border in LCD type, as shown in the figure below:




**Note**


Top border and bottom border, left border and right border are changed equivalently. For example, if set top border as 100, bottom border will be changed to 100 automatically, and if set left border as 200, right border will be changed to 200 automatically.


For example, set the top border, bottom border, left border and right border as 100, as shown in the figure below:




**Close monitor:** Click the icon  on the top right corner of the monitor to close one monitor,

or click the shortcut  on the right side of the interface to close all monitors.

**Reset monitor:** User can reset the monitor by clicking the shortcut  on the right side of the interface.

**Swap monitor:** User can swap the monitor by clicking the shortcut  on the right side of the interface, as shown in the figure below.



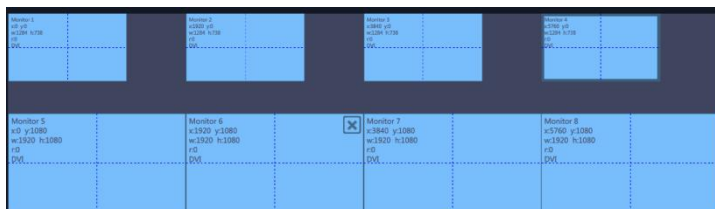
**Auto tile:** User can enable or disable the auto tile function by clicking the auto tile shortcut  on the right side of the interface. If select auto tile “ON”, the layer will automatically snap to the output grid when move the layer to the position within the threshold value.

**Monitor Size and Position Setting:** Move the mouse to the lower right brink of the monitor, and press the left key of the mouse. Move the mouse to the suitable position and release the mouse. But this method can only adjust the size and location roughly, if an accurate adjustment is needed, select the monitor, and set the X, Y, width and height in the bottom of the interface.





**Monitor Size changed equivalently:** Select any monitor, for example, select monitor 1, and adjust the size. Click this monitor, then press button C and don't let go, select the monitor that will set, the size of the selected monitor will be changed to the same size of monitor 1, as shown in the figure below:



**Rotation:** Select the monitor, and set the rotation as 0°, 90°, 180° and 270° in the bottom of the interface. Click “OK” to confirm. As shown in the figure below:

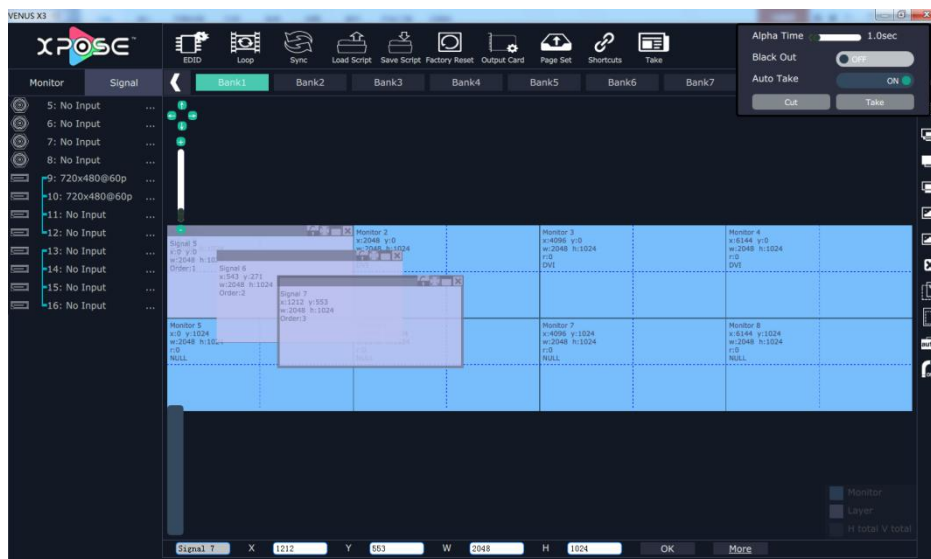


Right click the monitor can also rotate the monitor, and each output module can only swap one output.

**Output Area Size Setting:** Move the mouse to the output area and slide the mouse wheel, the output area size can be zoom in and out. When zoom out the output area, press the wheel of the mouse will drag the whole operation area.

### Layer Setting

**New Layer:** In output screen zone of controlling software, press the left mouse key and drag on the intended output screen to cover the whole current screen. And the below interface will be displayed. A layer can also be opened by double clicking the left signal source to be shown on the window.



**Adjust Layer:** Two ways can change the size and location of the opened layer:

a. Drag the opened layer by mouse. The details are: move the mouse to the brink of the opened layer, when the mouse shows “<—>”, press the left key of the mouse and drag the window to a suitable size and then release the mouse. Or move the mouse to the lower right of the opened layer, press the left key of the mouse and drag the window to a suitable size and then release the mouse. Move the mouse to the opened layer and press the left key of the mouse and move the







---



mouse, then the layer will be moved, release the mouse when moved to the suitable location. But this method can only adjust the size and location roughly, if an accurate adjustment is needed, the second method can be used.


b. Select the layer to be adjusted, and set the X, Y, width and height in the bottom of the interface.





**Hierarchical relations between layers:** After creating the layers, the hierarchical relations can



be changed by the following: click the shortcut key bring layer to top “”, bring layer to bottom “”, layer forward “” or layer backward “”. The layer can be set as background by click “” and click “” to remove the layer background.


**Close one layer or all layers:** Click the icon  on the top right corner of the layer to close one layer, or click the shortcut key “” to close all layers.

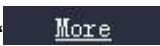
**Lock the layer:** Click the icon  on the top right corner of the layer to lock the layer, the layer can't be moved or adjusted if be locked.

**Layers Group:** If user need to move two or more layers at the same time, long press the button G, and click the layers that to operate, then release the button G, the selected layers will be grouped, which can be moved or scaled easily.

**Full the layer:** Click the icon  on the top right corner of the layer to full cell, and click the icon  to full screen.

**Copy and paste bank:** Select the bank that to copy, and click the copy bank shortcut “” on the right side of the interface, then select the bank that to paste, and click the paste bank shortcut “”. The selected layer will pasted to the bank.

**Adaptive:** If scale the output area to a large area, click the adaptive shortcut “” on the right side of the interface, the output area will be return to the best position.

**Layer Property Setting:** Select the layer to be adjusted, click the More shortcut “” in the bottom of the interface, and enter the interface as follows:



Scale: Set the X, Y, width and height.

Crop: Crop the left, top, width and height.

Display Mode: Select “Live” or “Freeze”.

Mirror: Enable or disable the mirror function, default “OFF”.

Alpha: Set the alpha, the adjustment range is 0~128.

Sharpness: Set the sharpness, the adjustment range is 0~100.

Brightness: Set the brightness, the adjustment range is 0~100.

Contrast: Set the contrast, the adjustment range is 0~100.

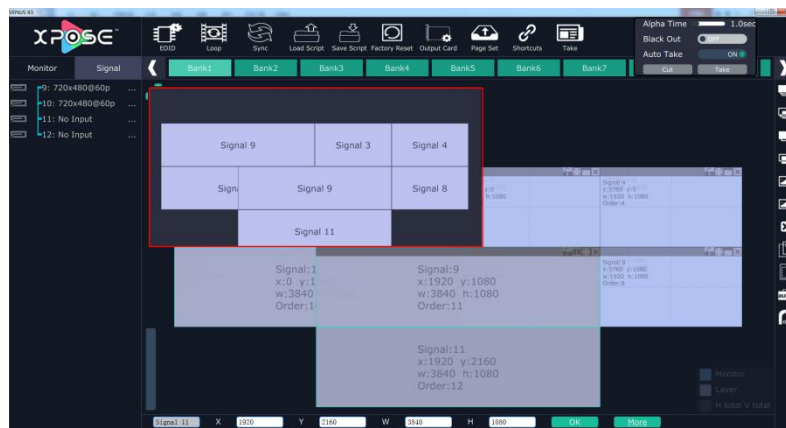
Saturation: Set the saturation, the adjustment range is 0~100.

Color Term: Set the color temp (red, green and blue), the adjustment range is 0~100.

Reset: Select “Reset”, the input property will be recover to factory setting.

## Scene Preview

Except the Matrix Mode, stay the mouse on the scene in Videowall Mode, Preview Mode or 3D-Mode, it will pop up the preview window for the layer layout, as shown in the figure below:




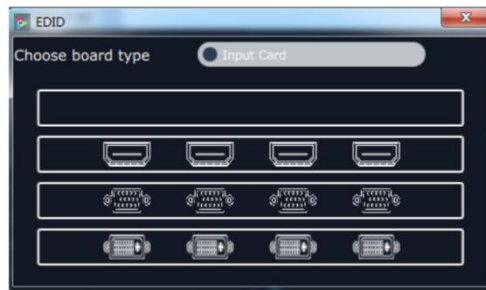
User can preview the layer layout more directly, and switch it to the program output.

---

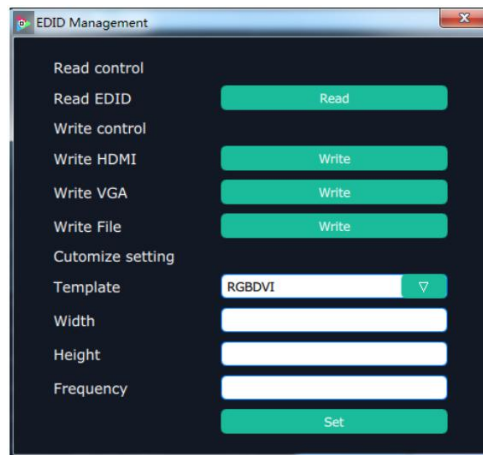
## EDID



Click the EDID shortcut “”, and pop-up window as follows:



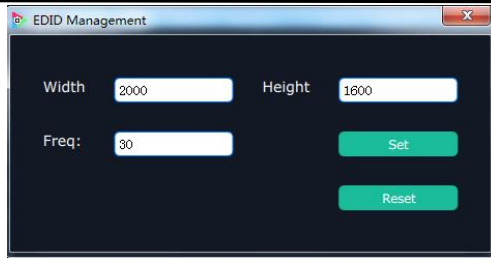
The special display project or LED display application would like to require special resolution settings to meet the requirement. Select the input or output board to read and write the EDID. As shown in the figure below:



If select the 4K input card, as shown in the figure below:



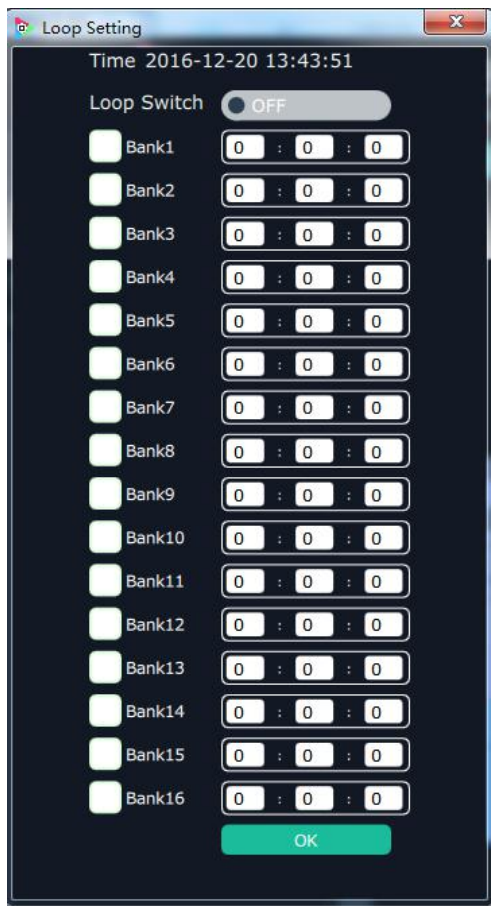
Click the input port, and set the width, height and frequency. Click “**Set**” after setting. Select “**Reset**”, all the setting will be recover to factory setting.



## Loop



Click the loop shortcut “**Loop**”, and pop-up window as follows:



Slide the loop switch to enable or disable the loop function for the bank. If select “ON”, the bank play time can be set.

## Sync



Click the sync shortcut “**Sync**” to synchronize all current data of device and XPOSE.

## Load Script



Click the load script shortcut “**Load Script**”, user can load the data from the computer.

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## Save Script



Click the save script shortcut “Save Script”, user can save the data to the computer.

## Factory Reset

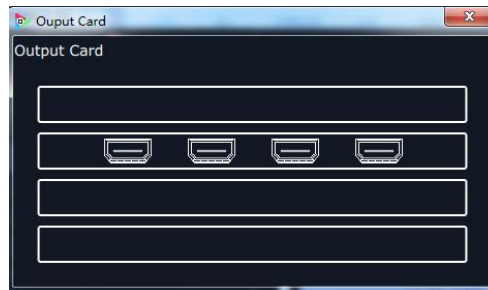


Click the factory reset shortcut “Factory Reset” to reset to factory settings.

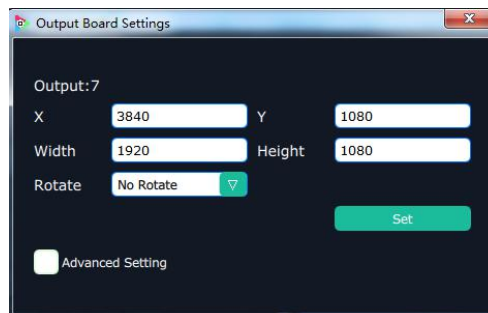
## Out Card Set



Click the out card set shortcut “OutCard Set”, and pop-up window as follows:

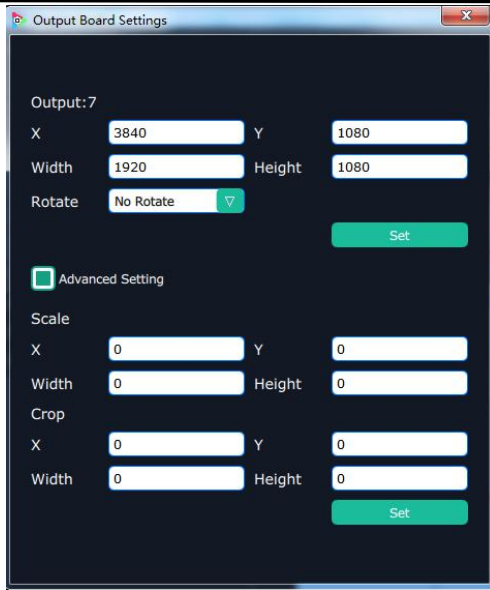


Click any output, and pop-up window as follows:



X, Y, width, height, rotate can be set.

Click “Advanced Setting”, pop-up window as follow:



If user need to connect to the LED display, or there is deviation in splitting, enter to the advanced setting, and scale or crop the image.

### Page Set



Click the shortcut “Page Set”, and pop-up window as follows:



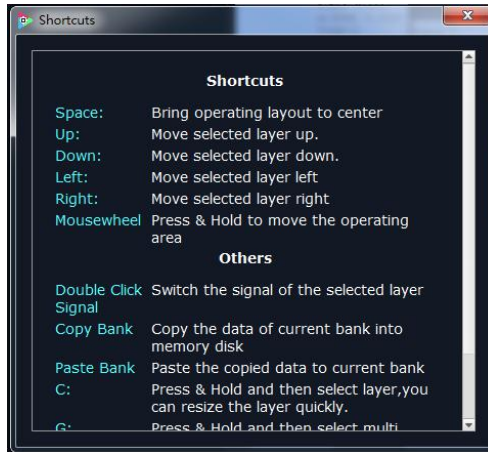
Save Page: Click any one of page 1~page 16. The button light will be on and then turn to gray if save the scene successfully.

Load Page: The button light on is the saved scene, and can be loaded.

## Short Key



Click the shortcut “ShortKey”, and pop-up window as follows:



Use shortcut key to operate fast and easily.

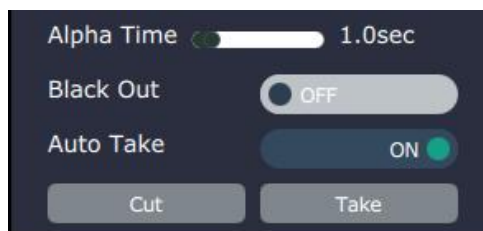
## Take



Default display the Take window. Click the shortcut “Take”, it will hide the Take window, and

click the shortcut again, it will pop-up the window.

The Take window is shown as the figure below:



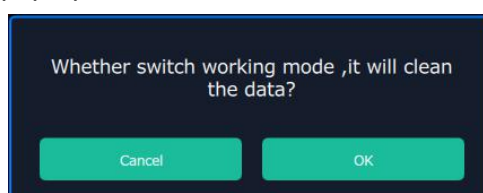
Set the alpha time, and the adjustment range is 0~10S.

Slide the black scene switch to enable or disable the black function. Auto take on is the default state. If select black scene and auto take on, the preview image will black or seamless switch to LED display instantaneously.

Click “Cut” or “Take”, the preview will be cut or seamless switch to LED display.

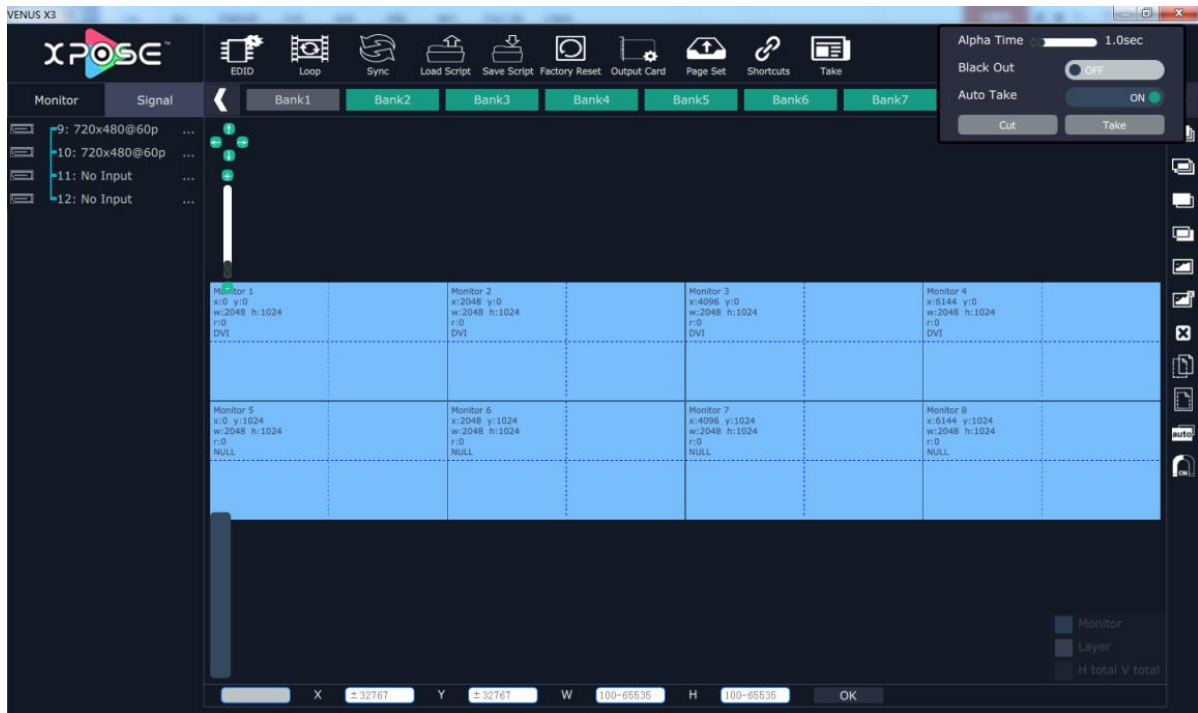
## Fade Mode

Click the “Fade Mode”, and pop-up window as follows:





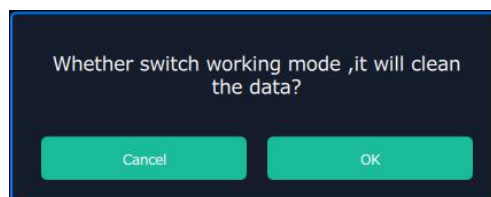
Click “OK”, and the system will synchronize the data, about 5 seconds later, it will enter the interface as follows:



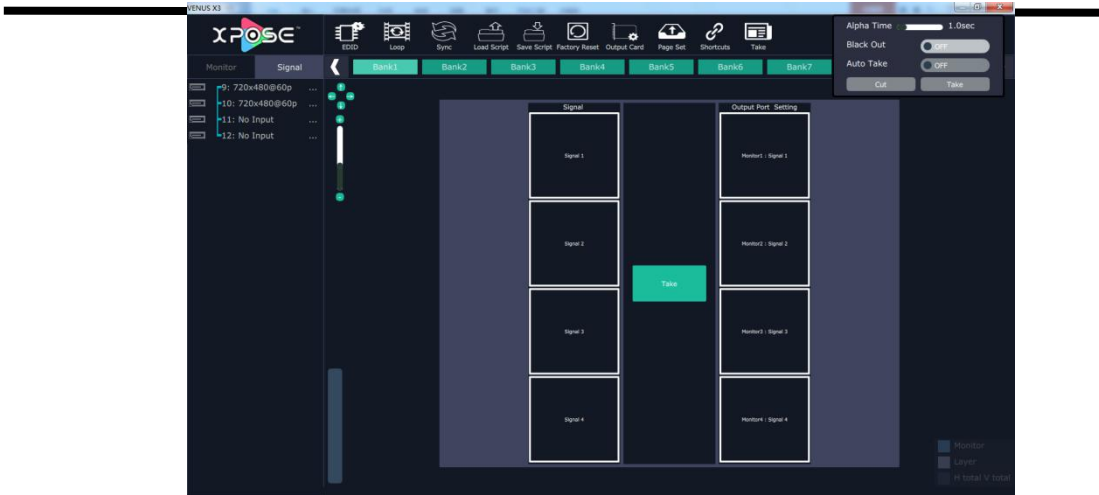
The operations for Fade mode are same with Videowall mode. The difference is, in Fade mode, there is only one layer in one output, user can adjust the size and position of the layer.

## Matrix Mode

Click the “Matrix Mode”, and pop-up window as follows:

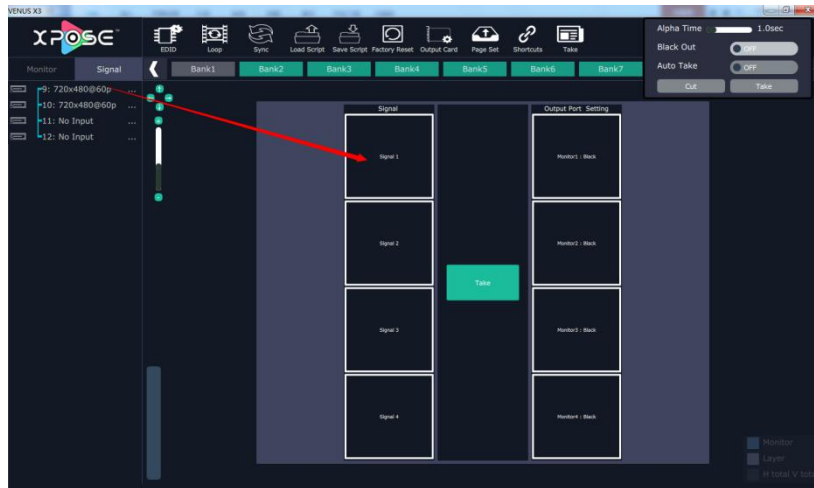


Click “OK”, and the system will synchronize the data, about 5 seconds later, it will enter the interface as follows:

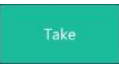


In matrix mode, any operations are unavailable except signal selection, bank selection, alpha time and black scene setting.

Default source 1 to monitor 1, source 2 to monitor 2, and so on. Select the signal, and drag it to the source that will set. For example, set signal 9 for source 1, as shown in the figure below:

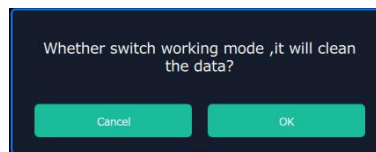


**Note:** Click the monitor (the border of the monitor will turn to red), then double click the signal (the border of the monitor will turn to yellow), the signal will be switched to the monitor.

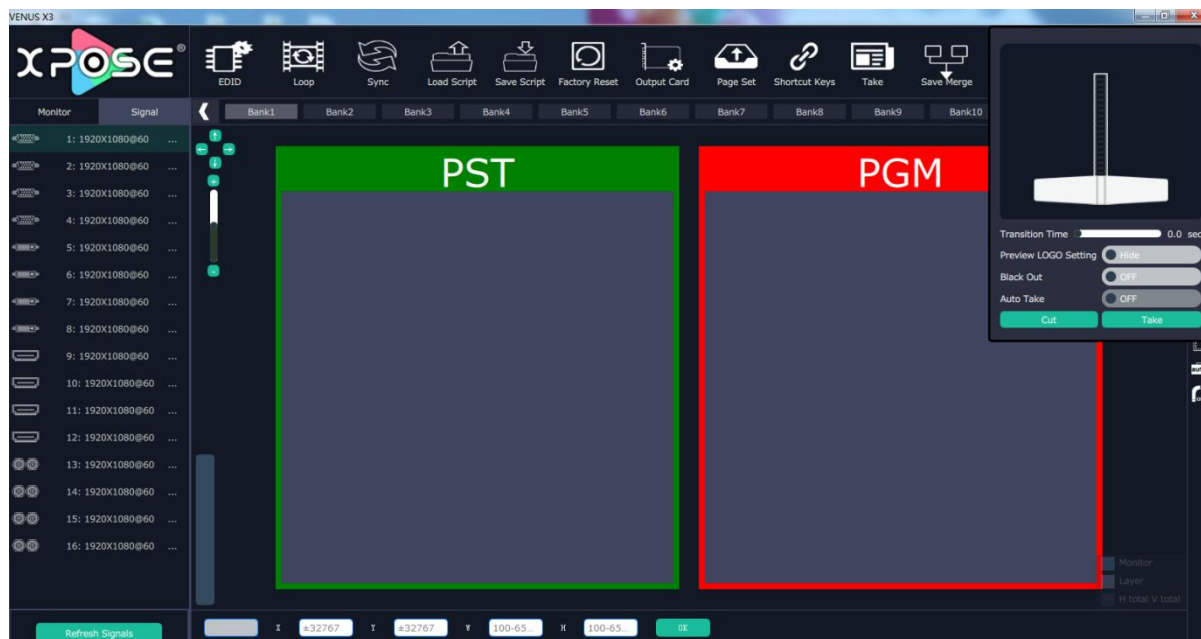
Source 1 will be switched to signal 2, click source 1, then click “Take” icon , the signal will be switched to the corresponding monitor. Connect the signal to the corresponding output after setting.

## Preview Mode

Click the “Preview Mode”, and pop-up window as follows:



Click “OK”, the system will synchronize the data, and it will finish about 5 seconds later, click “OK”, it will enter the interface as follows:



In preview mode, Default outputs 2.4.6.8 as preview channel and outputs 1.3.5.7 as program channel.

All scene settings are done in PST and display on preview monitor. Users can drag the signal from the signal list to PST and when the scene setting is finished. Use the virtual T-Bar to switch the display to PGM.



Transition Time: Users can slide the bar to set the transition Time, rang from 0-10s

Preview Logo Setting: Hide or Display the “Preview” logo on the preview monitor.

Black Out: On or Off

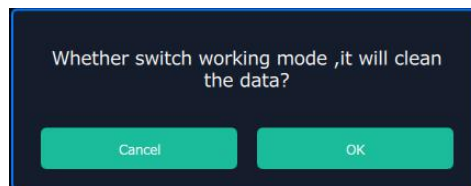
Auto Take: doesn't work under Preview Mode

CUT:switch PST to PGM display instantaneously

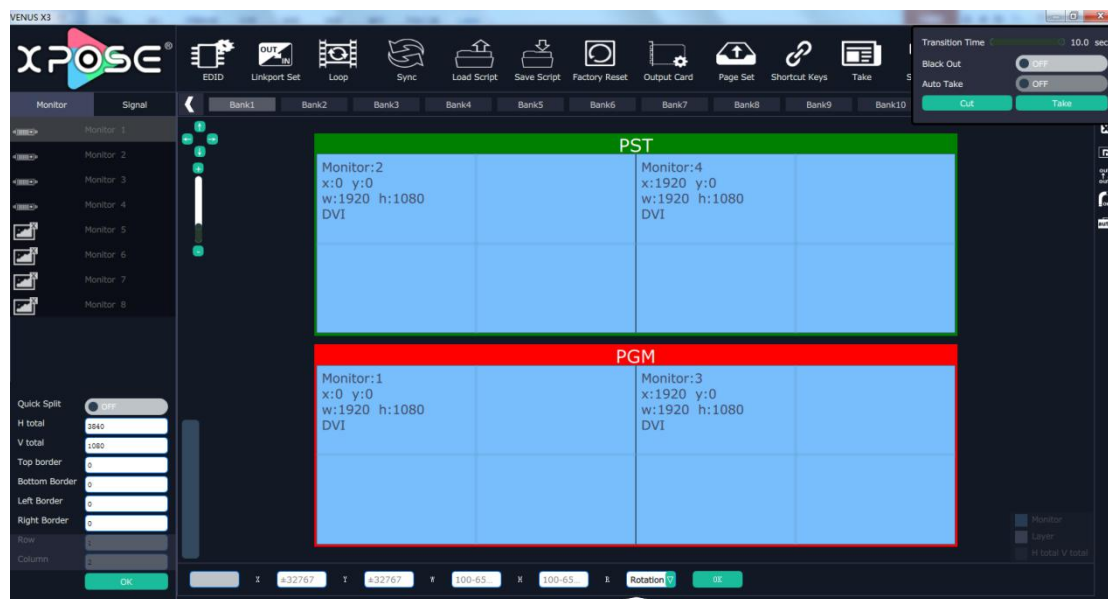
Take:swtch PST to PGM in transition time.

## Link Mode

Click the “Link Mode”, and pop-up window as follows:



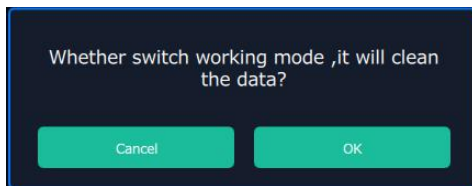
Click “OK”, the system will synchronize the data, and it will finish about 5 seconds later, click “OK”, it will enter the interface as follows:



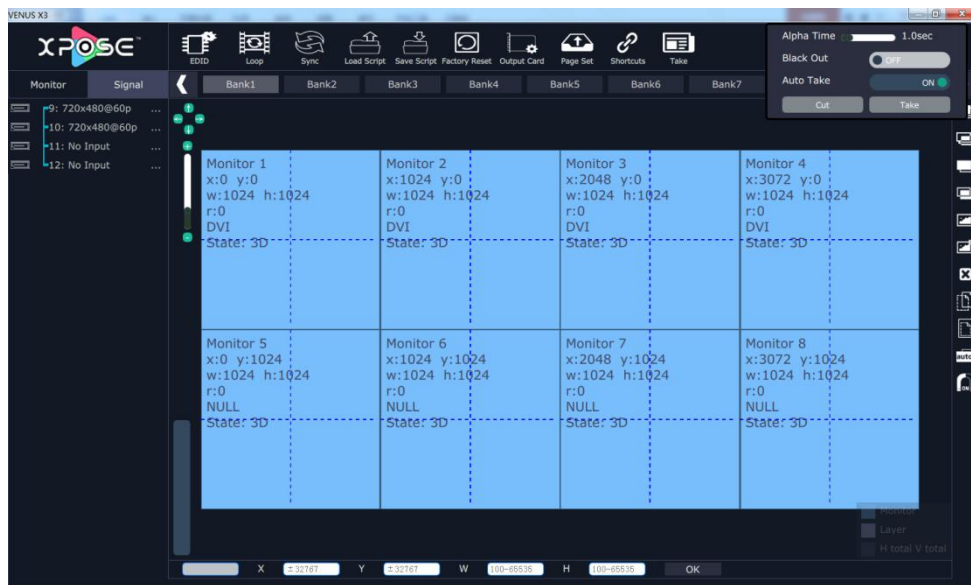
The link mode can achieve 5 pictures to 5 pictures seamless switching. It needs to connect output 6 and output 8 to the inputs ports that support for same signal, for instance, if output 6 is DVI connector, then link it to DVI input or HDMI input via adapter; if it is HDMI output, link it to HDMI input or DVI input via adapter; but if it is SDI output, link only to SDI input.

## 3D-Mode

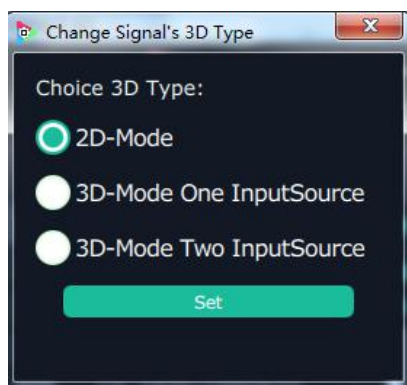
Click the “3D-Mode”, and pop-up window as follows:



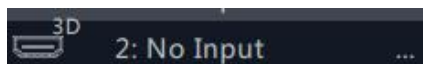
Click “OK”, the system will synchronize the data, and it will finish about 5 seconds later, click “OK”, it will enter the interface as follows:



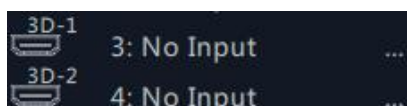
Default 2D-Mode, right click the signal, and select “Set Input 3D Type”, it will enter the interface as follows:



User can select “3D-Mode One InputSource” or “3D-Mode Two InputSource”. If select “3D-Mode One InputSource”, it will show “3D” on the signal, as shown in the figure below:



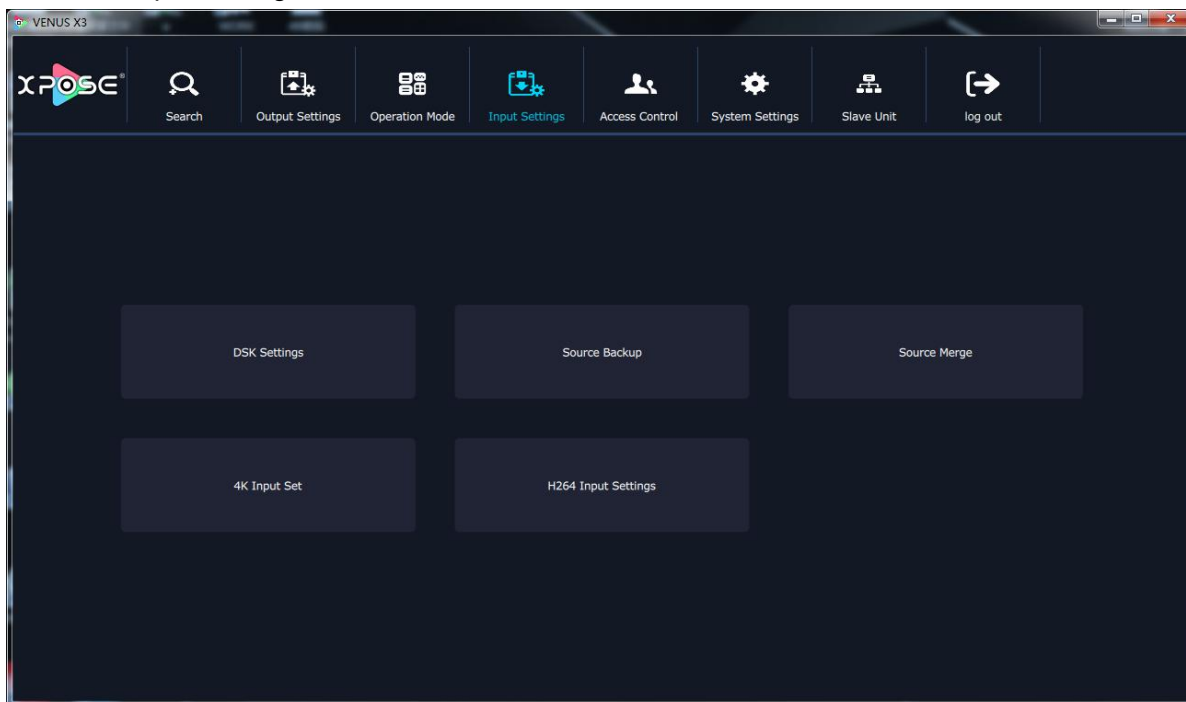
If select “3D-Mode Two InputSource”, it will show “3D-1” and “3D-2” on the signal, as shown in the figure below:



The other operations are same with “Videowall Mode”.

### 3.2.5 Input Settings

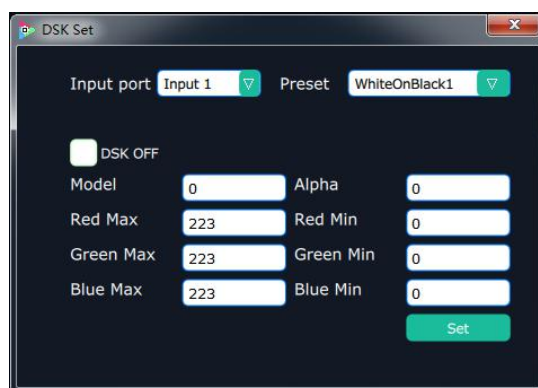
Click the “Input Settings”, and enter the interface as follows:



DSK settings, source backup, source merge , 4K input set and H264 Input Settings are included in input settings, specific as follows:

#### DSK Settings

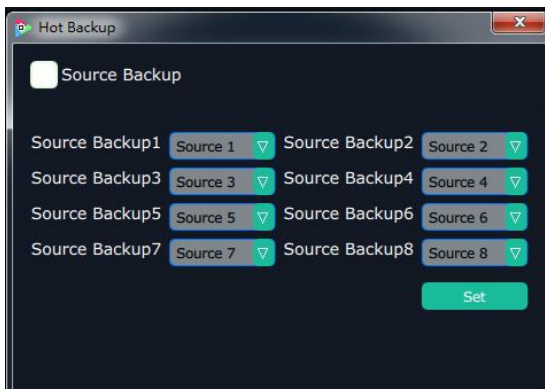
Click the “DSK Settings”, and pop-up window as follows:

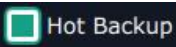


Select DSK ON, as shown in figure , then set the input ports, including preset selection, custom mode, alpha and color setting. Click “Set” to confirm.

## Source Backup

Click the “Source Backup”, and pop-up window as follows:



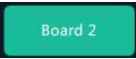

Enable the hot backup function, as shown in figure , and set the backup signal for Hot Backup 1 to Hot Backup 8. It will switch to the backup signal if the signal is interrupted.

## Source Merge

Click the “Source Merge”, and pop-up window as follows:



The DVI and S-HDMI input optional module support signal merger. Click any valid input board,

for example, select , then select the merger mode, for example, select , as shown in the figure below:



Click any layer, then click any source, and the layer source can be switched, as shown in the

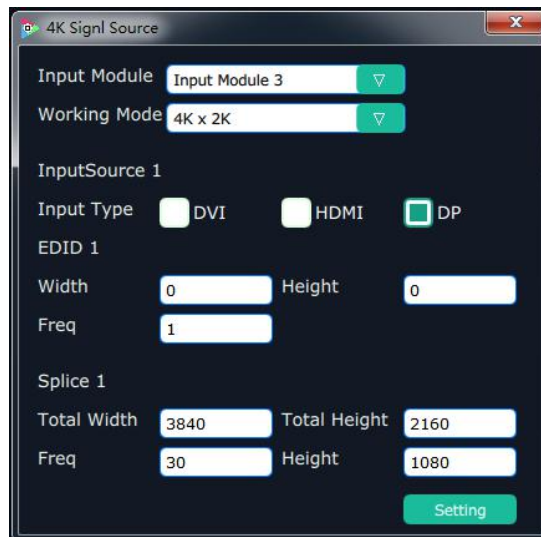
figure below:



User can also scale or crop the layer.

## 4K Input Set

Click the “4K Input Set”, and pop-up window as follows:



**Input Module:** Click the pull down arrow to select the 4K input module.

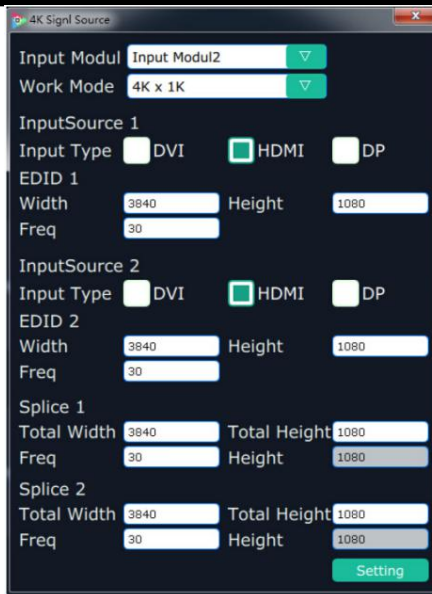
**Source:**

1. If select 4Kx2K, user can only select one source from source 1 (select one among DVI, HDMI and DP).
2. If select 4Kx1K, user need to select each one source from source 1 and source 2 (the two sources can be same or different, for example, DVI and DVI, DVI and HDMI).
3. If select 2Kx1K, user need to select each one source from source 1 and source 2 (the two sources can be same or different, for example, DVI and DVI, DVI and HDMI).
4. Click “**Set**” after select the working mode.

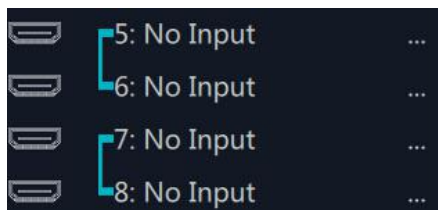
## 4K Group

1. Connect the 4K input board, and select the working mode, for example, select 4K×1K, then select the source, for example, select HDMI for source 1, and select HDMI for source 2, shown as follows:





2. Open the videowall mode, it will display the combined HDMI signals in the signal list, shown as follows:



3. Drag any signal to the monitor, the two outputs will combine to a picture with 3840x1080 automatically, shown as follows:



## H264 Input Settings

Click the “H264 Input Settings”, and pop-up window as follows:

The screenshot shows a configuration window titled "H264 Input Set". It contains the following fields and options:

- Input Card:** A dropdown menu set to "Input Card 1".
- Input Port:** A dropdown menu set to "Input Port 1 & 2".
- Ip Set:** A checked checkbox.
- Ip Address:** Four input fields with values 192, 168, 1, and 136.
- Netmask:** Four input fields with values 255, 255, 255, and 1.
- Gateway:** Four input fields with values 192, 168, 1, and 10.
- DNS:** Four input fields with values 192, 168, 0, and 0.
- Mac:** Six input fields with values 11, 22, 33, 44, 55, and 66.
- Network URL Set:** An unchecked checkbox.
- Windows:** A dropdown menu set to "One Window".
- Network URL:** Seven input fields, each followed by a "Set" button.
- Set:** A large green button at the bottom right.

**Input Card:** The default input card is input card 1.

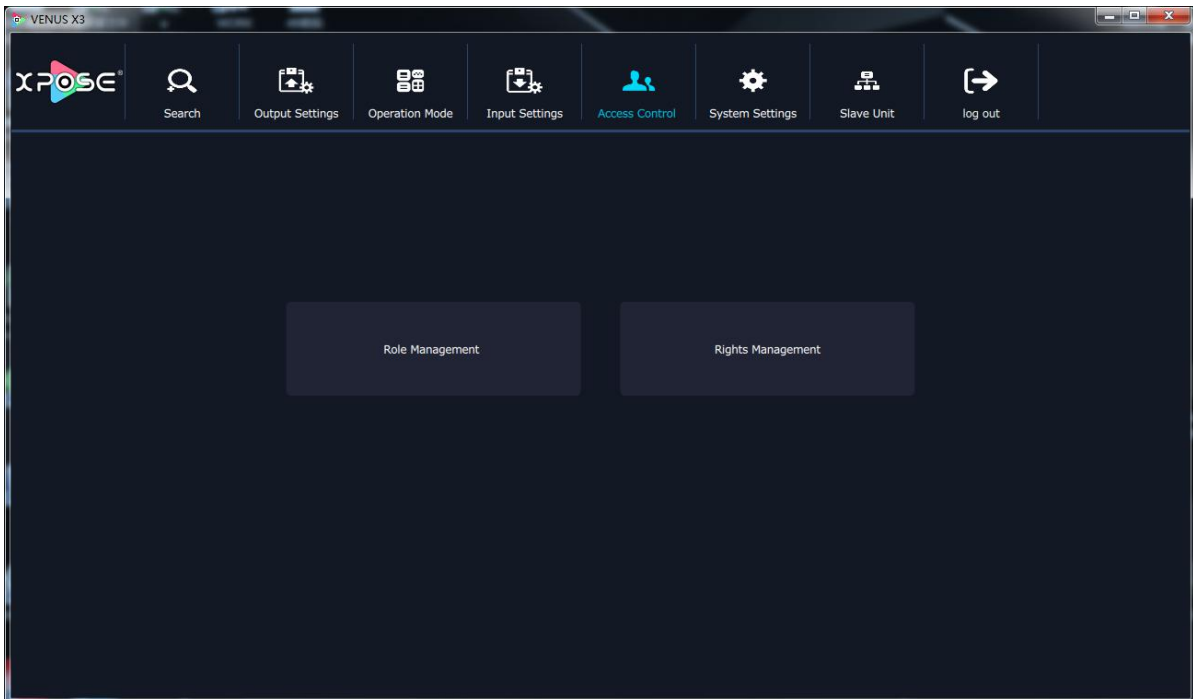
**Input Pot:** Users can select input port 1&2 or input port 3&4

**IP Set:** If select “ IP Set“, users can set IP address,Netmask,Gateway,DNS and MAC.

**Network URL Set :** If select “ Network URL Set“, users can set “ One Window“ ,“Four Windows“and “ Eight Windows“,then set Network URL separately.

## 3.2.6 Access Control

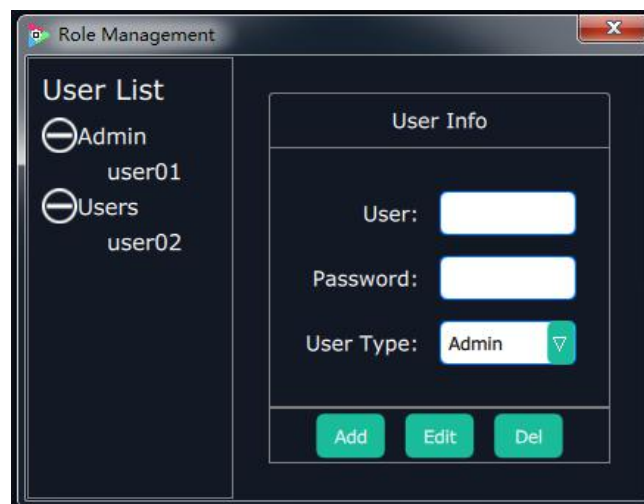
Click the “Access Control”, and enter the interface as follows:



Role management and rights management are included in access control, specific as follows:

### Role Management

Click the “Role Management”, and pop-up window as follows:



**Add:** Input the user name and password, and select the user type as “Admin’ or “Users”, click “Add” after setting.

**Edit:** Select the admin or users in user’s list, then edit the password or user type, click “Edit” after setting.

**Del:** Select the admin or users in user’s list, then click “Del”, the selected user will be deleted.

## Rights Management

Click the “Rights Management”, and pop-up window as follows:



Select the admin or users in user’s list, then click the rights in “Managements Detail”. Click “OK” after setting. User can operate the rights that selected.

**User Info:** Display all the Admin or Users list, double click it will unfold or fold the list.

### **Management Details:**

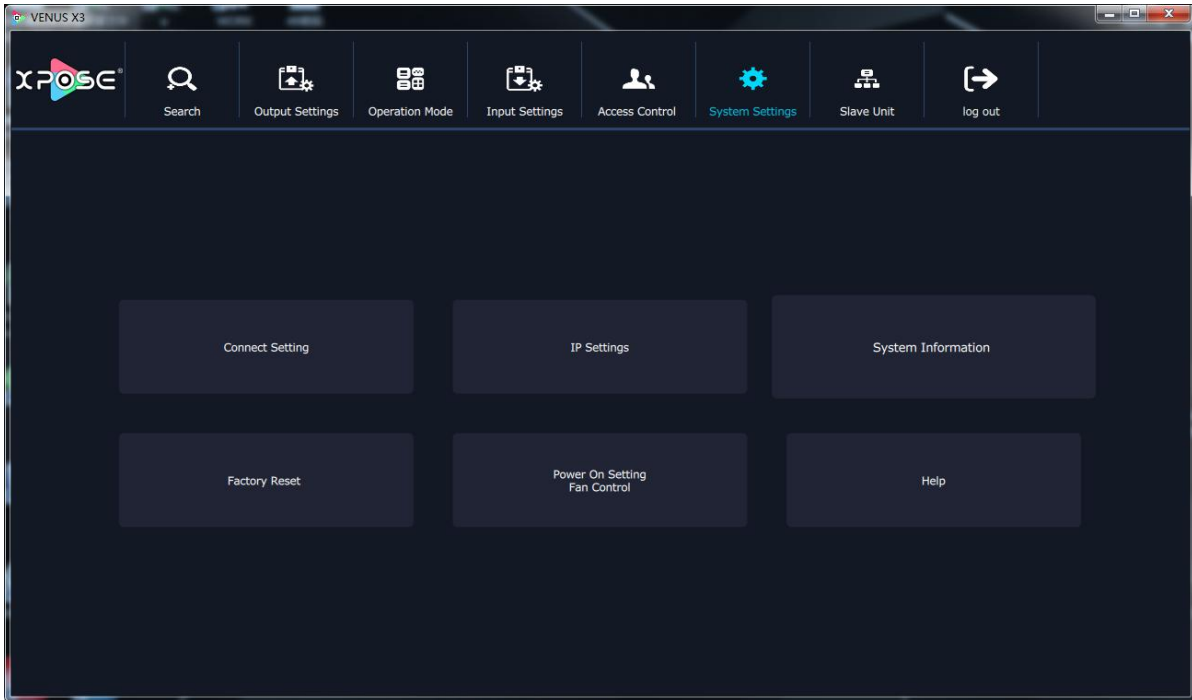
The admin can manage all the admin users and users user.

Admin users can manage all the users user, except the admin users.

Users can not manage all the users, including admin user and users user.

## 3.2.7 System Settings

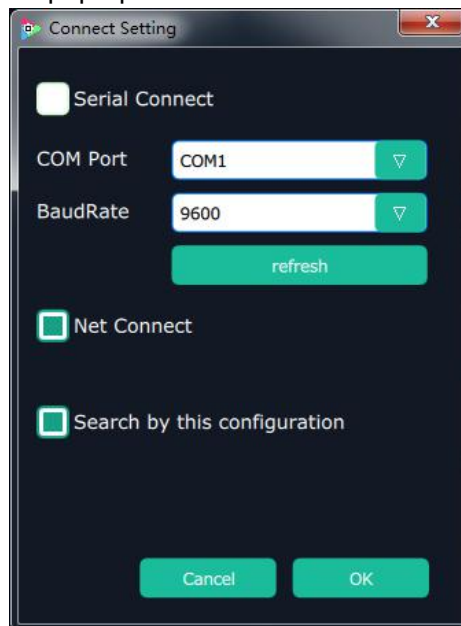
Click the “System Settings”, and enter the interface as follows:



Connect Setting, System information, IP settings, factory reset, power on settings and help document are included in system settings, specific as follows:

### Connect Setting

Click the “Connect Setting”, and pop-up window as follows:



Select the serial connect and net connect, the software will search all the devices if not select “Search by this configuration”.

If select “Serial Connect” and “Search by this configuration”, the software will search all the devices with corresponding serial port.

---

If select “Net Connect” and “Search by this configuration”, the software will search all the devices with corresponding IP.

## System Information

Click the “System Information”, and pop-up window as follows:



Display the software version information. Including device model, serial number, IP address, firmware version, etc.

## IP Settings

Click the “IP Settings”, and pop-up window as follows:



Default “Auto get ip address”. Users can also set IP address, mask and gateway manually. This is usually used if one computer control some devices or remote control. It takes effect after reboot the software if change IP through network.

## Factory Reset

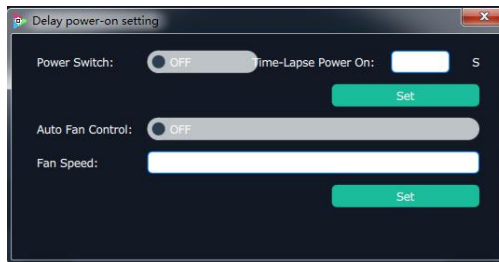
Click the “Factory Reset”, and pop-up window as follows:



Select “Remove the LOGO”, and click “**OK**”, the LOGO will be removed.  
Select “Remove EDID”, and click “**OK**”, the EDID will be removed.

## Power On Setting Fan Control

Click the “Power On Setting Fan Control”, and pop-up window as follows:



### Delay Power-On Setting

**Power Switch** : On or Off.

**Time-Lapse Power on**: rang from 0-255S

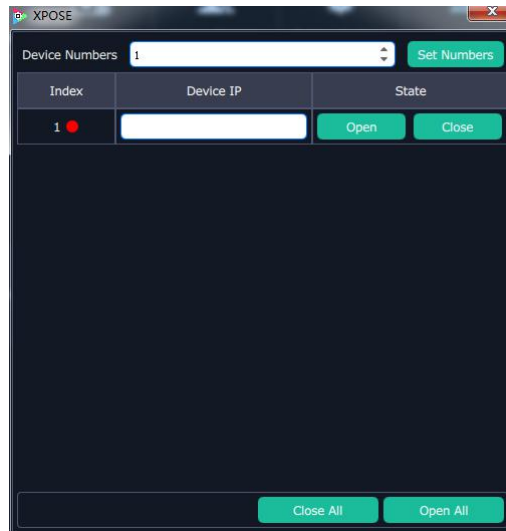
**Auto Fan Control/Fan Speed**: On/Off, choose **On** the device will adjust the fan speed according current working temperature;choose **Off**,users can manually type in the Fan Speed, rang from 0-100.

## Help Document

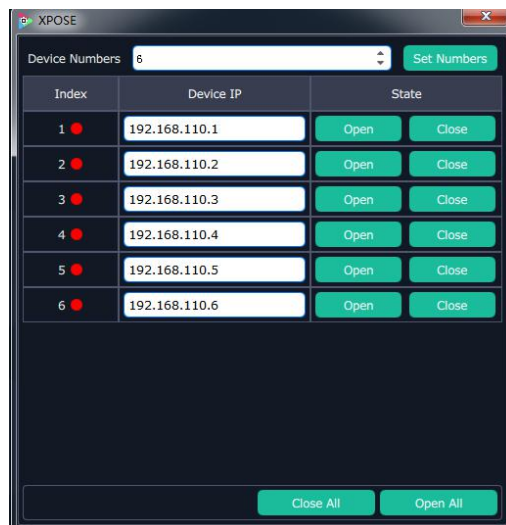
Click “Help Document”, it will connect to the user manual, which is much convenient for users.


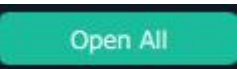


### 3.2.8 Slave Unit

Click the “Slave Unit”, and enter the interface as follows:

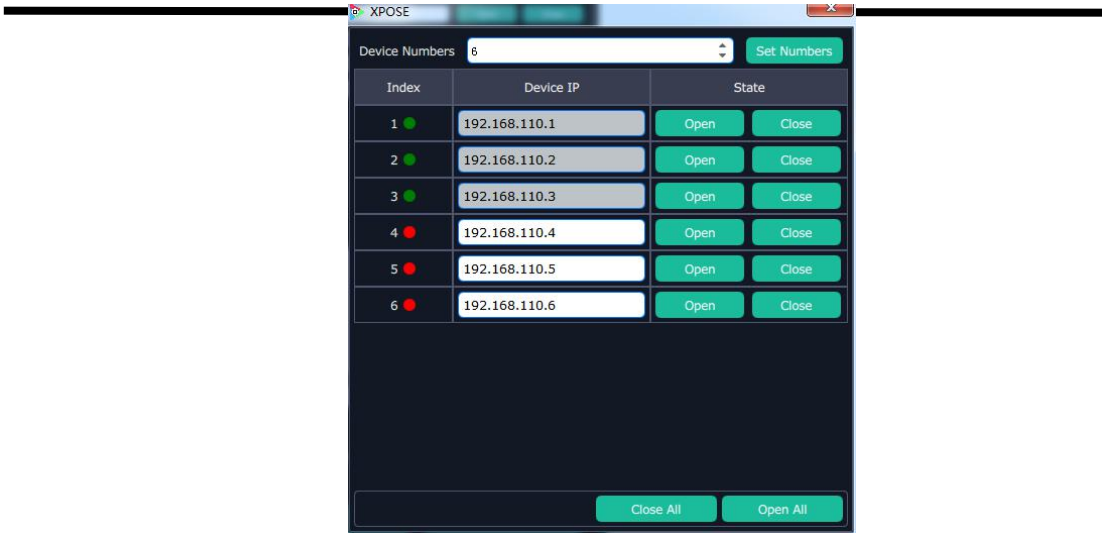


If need more X3 devices to be backup, connect all X3 devices into one router, Users can type in the Device Numbers and Set Numbers, then it will pop up the following window:



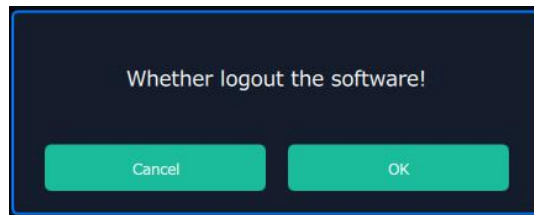
Users can close/open all communication port of all X3 devices by  open all  or close/open one by one. When one device is connected, the red dot  behind the index turn green .





### 3.2.9 Logout

Click the “Logout”, and enter the interface as follows:



Click “OK” will logout the XPOSE.

---

# Chapter 4 Ordering Codes

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## 4.1 Product

310-0003-11-0 X3

## 4.2 Options

### 4.2.1 Input Options

190-0003-01-0	Quad DVI Input Module
190-0003-02-0	Quad D- HDMI Input Module
190-0003-03-0	Quad VGA Input Module
190-0003-04-0	Quad D-SDI Input Module
190-0003-06-0	CVBS Input Module
190-0003-07-0	Quad USB Input Module
190-0003-11-0	4K@30Hz Input Module
190-0003-25-0	4K@60Hz Input Module
190-0003-18-0	Quad HDBaseT Input Module
190-0003-13-0	H.264 Input Module
190-0003-17-0	12G-SDI Input Module

### 4.2.2 Output Options

190-0003-21-0	DVI Output Module
190-0003-24-0	SDI Output Module
190-0003-22-0	2K HDMI Output Module
190-0003-38-0	HDMI 2.0 Output Module
190-0003-25-0	HDBaseT Output Module

### 4.2.3 Other

190-0003-28-0	2K DVI ARO-Advanced Rotation
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# Chapter 5 Support

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## 5.1 Contact Us

### Contact Us



#### Web

[www.rgblink.com](http://www.rgblink.com)

#### Phone

+86-592-577-1197

#### Email

Sales [sales@rgblink.com](mailto:sales@rgblink.com)  
Support [support@rgblink.com](mailto:support@rgblink.com)

#### Social Media



@RGLINK



/rgblink



+rgblink



/rgblink





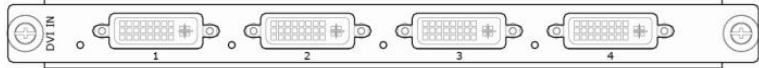
rgblink




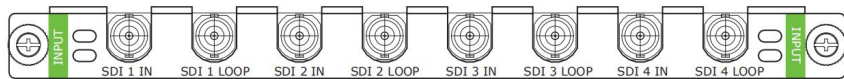


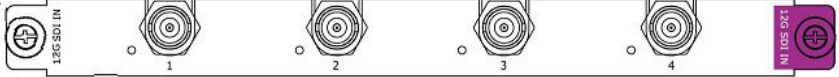


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# Chapter 6 Appendix

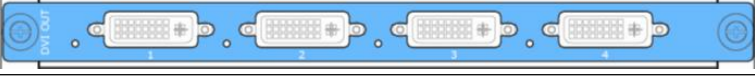
## 6.1 Specification




CVBS Input Module	
Interface Appearance	
Board Size	216*200*20 (mm)
Number of Connectors	8 (4 Inputs and 4 backup)
Connector	Standard BNC Socket
Supported Standards	PAL   NTSC   SECAM
Signal Level	1Vpp±3db (0.7V Video+0.3v Sync) 75 ohm
Supported Resolution	480i   576i
VGA Input Module	
Interface Appearance	
Board Size	216(L)×20(W) (mm)
Number of Connectors	4
Connector	Standard DB15 Socket
Supported Standard	VGA-UXGA
Signal Level	R、G、B、Hsync、Vsync:0 to1Vpp±3dB (0.7V Video+0.3v Sync) 75 ohm black level: 300mV Sync-tip: 0V
Supported Resolution	VESA 800x600@60   1024x768@60   1280x1024@60   1366x768@60   1440x900@60   1600x1200@60   1920x1080@60
DVI Input Module	
Interface Appearance	
Board Size	216*200*20 (mm)
Number of Connectors	4
Connector	Standard DVI-I socket
Supported Resolution	SMPTE 480i   576i   720p@50/59.94/60   1080i@50/59.94/60   1080p@50/59.94/60 VESA 800x600@60   1024x768@60   1280x768@60   1280x1024@60   1600x1200@60   1920x1080@60

	1920x1200@60   2048x1152@60   2560x816@60	
Signal Level	TMDS pwl, single pixel input,165MHz bandwidth	
Format Standard	Single Link DVI	
<b>USB Input Module</b>		
Interface Appearance		
Board Size	216(L)×20(W) (mm)	
Number of Connectors	4	
Connector	Standard USB port	
Supported Standard	Support general Image and video formats	
<b>HDMI Input Module</b>		
Interface Appearance		
Board Size	216(L)×20(W) (mm)	
Number of Connectors	4	
Connector	HDMI standard type A interface	
Supported Resolution	SMPTE	480i   576i   720p@50/59.94/60   1080i@50/59.94/60   1080p@50/59.94/60
	VESA	800x600@60   1024x768@60   1280x768@60   1280x1024@60   1600x1200@60   1920x1080@60   1920x1200@60
Embedded Audio Channels	Choose one from the two inputs	
Format Standard	HDMI 1.3	
<b>HDMI Input Module(With Deinterlace Feature)</b>		
Interface Appearance		
Number of Connectors	4	
Connector	HDMI standard type A interface	
Supported Resolution	SMPTE	480i   576i   720p@50/59.94/60   1080i@50/59.94/60   1080p@50/59.94/60
	VESA	800x600@60   1024x768@60   1280x768@60   1280x1024@60   1600x1200@60   1920x1080@60   1920x1200@60
Format Standard	HDMI 1.3	
<b>3G-SDI Input /Loop Module</b>		
Interface Appearance		


Number of Connectors	8 (4 Input, 4 Loop)	
Connector	BNC	
Supported Resolution	SMPTE	480i   576i   720p@50/60   1080i@59.94/60   1080p@23.98/24/25/29.97/30/59/59.94/60   1080psf@23.98/24/25/29.97/30
Supported Standard	SMPTE 425M (Level A & B)   SMPTE 424M   SMPTE 292M   SMPTE 259M-C   DVB-ASI	
<b>12G-SDI Input Module</b>		
Interface Appearance		
Board Size	216(L)×20(W) (mm)	
Number of Connectors	4	
Connector	BNC	
Supported Resolution	SMPTE	480i   576i   720p@25/30/50/60Hz   1080i@50/50.94/60   1080p@23.98/24/25/29.97/30/50/59.94/60Hz   2160p@30/50/60
Supported Standard	SMPTE ST 2082-1, SMPTE ST 2081-1, SMPTE ST 424, SMPTE ST 292-1, SMPTE ST 259, DVB-ASI, MADI	
<b>HDBaseT Input Module</b>		
Interface Appearance		
Number of Connectors	4	
Connector	RJ45	
Supported Resolution	SMPTE	720p@50/59.94/60   1080p@23.98/24/25/29.97/30/50/59.94/60
	VESA	800x600@60/75/85   1024x768@60/75/85   1280x768@60   1280x800@60   1280x1024@60/75/85   1360x768@60   1366x768@60   1400x900@60   1600x1050@60   1600x1200@60   1680x1050@60   1920x1080@60   1920x1200@60   2048x1152@60   2560x812@60   2560x816@60
Standard	HDBaseT 1.0	
<b>H.264 Input Module</b>		
Interface Appearance		
Number of Connectors	4	

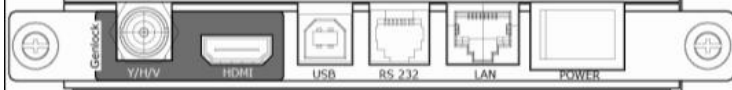
Connector	RJ45
Supported Resolution	176x144@60   240x180@60   320x180@60   320x240@60   320x256@60   352x228@60   352x480@60   400x224@60   400x320@60   480x270@60   480x272@60   480x320@60   480x360@60   480x384@60   480x480@60   544x480@60   608x448@60   640x360@60   640x480@60   704x576@60   720x404@60   720x480@60   720x540@60   720x576@60   850x480@60   1024x576@60   1280x720@60   1680x1056@60   1920x1080@60
Standard	H.264/MPEG-4 AVC
<b>4K@60 Input Module</b>	
Interface Appearance	
Number of Connectors	4
Connector	DVI-I   HDMI-A   DisplayPort
Supported Resolution	<p>SMPTE 720p@60   1080p@60   2160p@24/25/30/50/60</p> <p>VESA 800x600@60   1024x768@60   1280x768@60   1280x800@60   1280x1024@60   1360x768@60   1366x768@60   1400x900@60   1600x1050@60   1600x1200@60   1680x1050@60   1920x1080@23.98/24/25/29.97/30/50/59.94/60   1920x1200@60   2048x1152@60   2560x812@60   2560x816@60   2560x1600@60   3840x1080@60   3840x2160@23.98/24/25/29.97/30/50/60   4096x2160@60</p>
Standard	<p>DVI DUAL</p> <p>HDMI 2.0   1.4</p> <p>DisplayPort 1.2</p>

<b>DVI Output Module</b>	
Interface Appearance	
Board Size	216(L)×20(W) (mm)
Number of Connectors	4
Connector	Standard DVI-I Socket
Signal Level	TMDS pw, 165MHz bandwidth
Supported Resolution	<p>SMPTE 720p@50/59.94/60   1080p@50/59.94/60</p> <p>VESA 800x600@60   1024x768@60/75/85   1280x720@50/59.94/60   1280x800@60   1280x960@60   1280x1024@60/75/85   1400x1050@60   1600x1200@60   1920x1080@23.98/24/25/29.97/30/50/59.94/60</p>

	2048x1152@60
<b>SDI Output Module</b>	
Interface Appearance	
Board Size	216(L)×20(W) (mm)
Number of Connectors	4
Connector	BNC interface
Signal level	800mV±10%
Supported Standard	SMPTE 425M - 3G Level A Format
Supported Resolution	SMPTE 480i   576i   720p/50/59.94/60   1080i/50/59.94/60   1080p/50/59.94/60
Equalization	Belden 1694A 100m HD 1.485G, 300m SD 270Mbps
<b>2K HDMI Output Module</b>	
Interface Appearance	
Board Size	216(L)×20(W) (mm)
Number of Connectors	4
Connector	HDMI standard type A interface
Supported Resolution	SMPTE 480i   576i   720p50/59.94/60   1080i50/59.94/60   1080P50/59.94/60 VESA 800×600@60   1024×768@60   1280×768@60   1280×1024@60   1600×1200@60   1920×1080@50/60
Format Standard	HDMI 1.3
<b>HDBaseT Output Module</b>	
Interface Appearance	
Number of Connectors	4
Connector	RJ45
Supported Resolution	SMPTE 720p@50/59.94/60   1080i@50/59.94/60   1080p@23.98/24/25/29.97/30/50/59.94/60 VESA 800x600@60/75/85   1024x768@60/75/85   1280x768@60   1280x800@60   1280x1024@60/75/85   1360x768@60   1366x768@60   1400x900@60   1600x1050@60   1600x1200@60   1680x1050@60   1920x1080@60   1920x1200@60   2048x1152@60   2560x812@60   2560x816@60
Supported Standards	HDBaseT 1.0
<b>HDMI 2.0 Output Module</b>	



Interface Appearance		
Number of Connectors	HDMI-A	
Supported Resolutions	SMPTE	720p@60   1080p@60   2160p@60
	VESA	1280x720@60   1360x768@60   1366x768@60   1600x900@60   1920x1080@60   2540x1440@60   3480x2048@60   3840x2160@60
Supported Standard	HDMI 2.0	

Communication		
Interface Appearance		
Board Size	165(L)×19(W) (mm)	
Genlock		
Number of Connectors	2	
Connector	BNC (Genlock Y/H/V) HDMI (Genlock Loop)	
Control		
Number of Connectors	of	3
Connector	USB-B   RJ11   RJ45	
Function		
Switch	Support any two inputs fade in fade out	
Extras		
Power Supply	100-240V IEC-3	
Working Environment	0°C~45°C	
Stored Environment	10% to 90%	
Product Warranty	3 years parts and labor warranty	

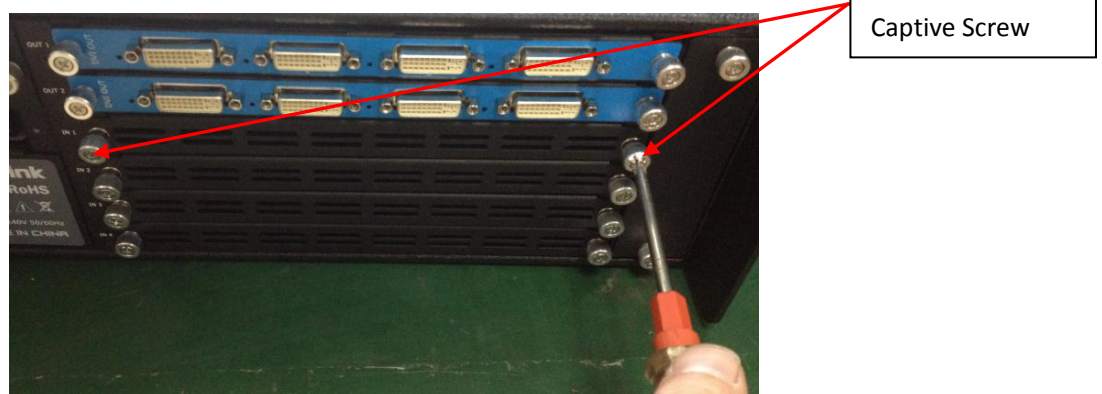
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## 6.2 Installing Options

X3 supports replaceable input and output optional modules, user can install or replace the optional module according to actual need. Take X3 for example, the specific installation steps are as follows:

### Install the Optional Module

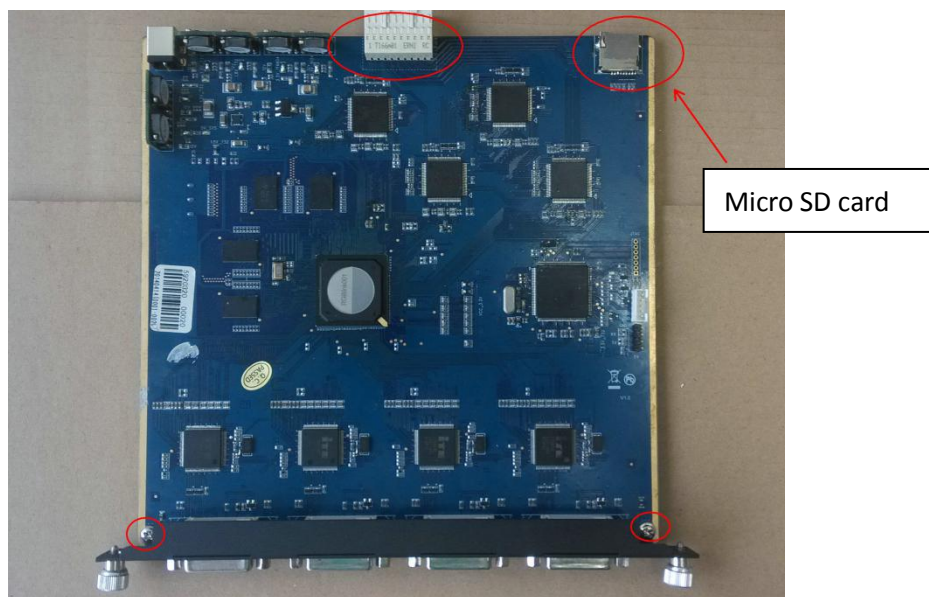
1. Unscrew the 2 captive screws in input modules block, and pull out the input module block, as shown in figure:





2. Install the input module:

For the whole PCB input module with DVI or HDMI interface, fix the input module on the plate with 2 M3\*4 flat screws, also need to install the 2G Micro SD card.



DVI input module:



- ① For the joined PCB input module with CVBS, HDMI, VGA, USB or SDI interface, fix the input module on the plate with 2 M3\*4 flat screws and 2 M3\*4 round head screws.



HDMI input module:



VGA input module:



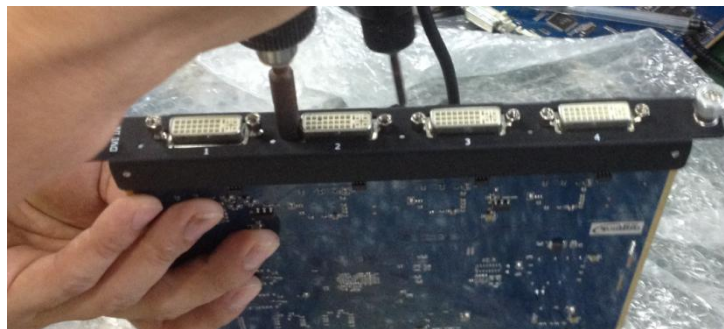
CVBS input module:



USB input module:



3. Fix the input module block with fixed screws, as shown in figure:



4. Push the input modules into the device along the slide rail, and screw the captive screws, as shown in figure:





**Note:** The install steps of output module installation and input/output module replacement are the same as above.

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## 6.3 Terms & Definitions

The following terms and definitions are used throughout this guide.

- **“ASCII”**: American Standard for Information Interchange. The standard code consisting of 7-bit coded characters (8 bits including parity check) used to exchange information between data processing systems, data communication systems, and associated equipment. The ASCII set contains control characters and graphic characters.
- **“Aspect ratio”**: The relationship of the horizontal dimension to the vertical dimension of an image. In viewing screens, standard TV is 4:3, or 1.33:1; HDTV is 16:9, or 1.78:1. Sometimes the “:1” is implicit, making TV = 1.33 and HDTV = 1.78.
- **“AV”**: Audio visual, or audio video.
- A **“Background”** is an unscaled source, typically originating from a computer. A background source appears at the system’s lowest priority — visually in back of all other sources.
- **“Baudrate”**: Named of J.M.E. Baudot, the inventor of the Baudot telegraph code. The number of the electrical oscillations per second, called baud rate. Related to, but not the same as, transfer rate in bits per second (bps).
- **“Blackburst”**: The video waveform without the video elements. It includes the vertical sync, horizontal sync, and the chroma burst information. Blackburst is used to synchronize video equipment to align the video output. One signal is normally used to set up an entire video system or facility. Sometimes it is called House sync.
- **“BNC”**: Bayonet Neill-Concelman. A cable connector used extensively in television and named for its inventors. A cylindrical bayonet connector that operates with a twist-locking motion. To make the connection, align the two curved grooves in the collar of the male connector with the two projections on the outside of the female collar, push, and twist. This allows the connector to lock into place without tools.
- **“Brightness”**: Usually refers to the amount or intensity of video light produced on a screen without regard to color. Sometimes called “black level.”
- **“CAT 5”**: Category 5. Describes the network cabling standard that consists of four unshielded twisted pairs of copper wire terminated by RJ-45 connectors. CAT 5 cabling supports data rates up to 100 Mbps. CAT 5 is based on the EIA/TIA 568 Commercial Building Telecommunications Wiring Standard.
- **“Color bars”**: A standard test pattern of several basic colors (white, yellow, cyan, green, magenta, red, blue, and black) as a reference for system alignment and testing. In NTSC video, the most commonly used color bars are the SMPTE standard color bars. In PAL video, the most commonly used color bars are eight full field bars. In the computer, the most commonly used color bars are two rows of reversed color bars.
- **“Color burst”**: In color TV systems, a burst of subcarrier frequency located on the back porch of the composite video signal. This serves as a color synchronizing signal to establish a frequency and phase reference for the chroma signal. Color burst is 3.58 MHz for NTSC and 4.43 MHz for PAL.

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- **“Color temperature”**: The color quality, expressed in degrees Kelvin(K), of a light source. The higher the color temperature, the bluer the light. The lower the temperature, the redder the light. Benchmark color temperature for the A/V industry include 5000°K, 6500°K, and 9000°K.
  - **“Contrast ratio”**: The ratio of the high light output level divided by the low light output level. In theory, the contrast ratio of the television system should be at least 100:1, if not 300:1. In reality, there are several limitations. In the CRT, light from adjacent elements contaminate the area of each element. Room ambient light will contaminate the light emitted from the CRT. Well-controlled viewing conditions should yield a practical contrast ratio of 30:1 to 50:1.
  - **“DVI”**: Digital Visual Interface. The digital video connectivity standard that was developed by DDWG (Digital Display Work Group). This connection standard offers two different connectors: one with 24 pins that handles digital video signals only, and one with 29 pins that handles both digital and analog video.
  - **“EDID”**: Extended Display Identification Data – EDID is a data structure used to communicate video display information, including native resolution and vertical interval refresh rate requirements, to a source device. The source device will then output the optimal video format for the display based on the provided EDID data, ensuring proper video image quality. This communication takes place over the DDC – Display Data Channel.
  - **“Ethernet”**: A Local Area Network (LAN) standard officially known as IEEE 802.3. Ethernet and other LAN technologies are used for interconnecting computers, printers, workstations, terminals, servers, etc. within the same building or campus. Ethernet operates over twisted pair and over coaxial cable at speeds starting at 10Mbps. For LAN interconnectivity, Ethernet is physical link and data link protocol reflecting the two lowest layers of the OSI Reference Model.
  - **“Frame”**: In interlaced video, a frame is one complete picture. A video frame is made up of two fields, or two sets of interlaced lines. In a film, a frame is one still picture of a series that makes up a motion picture.
  - **“Gamma”**: The light output of a CRT is not linear with respect to the voltage input. The difference between what you should have and what is actually output is known as gamma.
  - **“HDMI” - High – Definition Multimedia Interface**: An interface used primarily in consumer electronics for the transmission of uncompressed high definition video, up to 8 channels of audio, and control signals, over a single cable. HDMI is the de facto standard for HDTV displays, Blu-ray Disc players, and other HDTV electronics. Introduced in 2003, the HDMI specification has gone through several revisions.
  - **“HDSDI”**: The high-definition version of SDI specified in SMPTE-292M. This signal standard transmits audio and video with 10 bit depth and 4:2:2 color quantization over a single coaxial cable with a data rate of 1.485 Gbit/second. Multiple video resolutions exists including progressive 1280x720 and interlaced 1920x1080 resolution. Up to 32 audio signals are carried in the ancillary data.
  - **“JPEG” (Joint photographic Expects Group)**: Commonly used method of lossy compression for photographic images using a discreet cosine transfer function. The



- 
- degree of compression can be adjusted, allowing a selectable tradeoff between storage size and image quality. JPEG typically achieves 10:1 compression with little perceptible loss in image quality. Produces blocking artifacts.
- **“MPEG”**: Motion Picture Expert Group. A standard committee under the auspices of the International Standards Organization working on algorithm standards that allow digital compression, storage and transmission of moving image information such as motion video, CD-quality audio, and control data at CD-ROM bandwidth. The MPEG algorithm provides inter-frame compression of video images and can have an effective compression rate of 100:1 to 200:1.
  - **“NTSC”**: The color video standard used in North America and some other parts of the world created by the National Television Standards Committee in the 1950s. A color signal must be compatible with black-and-white TV sets. NTSC utilizes an interlaced video signals, 525 lines of resolution with a refresh rate of 60 fields per second (60 Hz). Each frame is comprised of two fields of 262.5 lines each, running at an effective rate of 30 frames per second.
  - **“Operator”**: Refers to the person who uses the system.
  - **“PAL”**: Phase Alternate Line. A television standard in which the phase of the color carrier is alternated from line to line. It takes four full pictures (8 fields) for the color-to-horizontal phase relationship to return to the reference point. This alternation helps cancel out phase errors. For this reason, the hue control is not needed on a PAL TV set. PAL, in many transmission forms, is widely used in Western Europe, Australia, Africa, the Middle East, and Micronesia. PAL uses 625-line, 50-field (25 fps) composite color transmission system.
  - **“PIP”**: Picture-in-Picture. A small picture within a larger picture created by scaling down one of the images to make it smaller. Each picture requires a separate video source such as a camera, VCR, or computer. Other forms of PIP displays include Picture-by-Picture (PBP) and Picture-with-Picture (PWP), which are commonly used with 16:9 aspect display devices. PBP and PWP image formats require a separate scaler for each video window.
  - **“Polarity”**: The positive and negative orientation of a signal. Polarity usually refers to the direction or a level with respect to a reference (e.g. positive sync polarity means that sync occurs when the signal is going in the positive direction).
  - **“RJ-45”**: Registered Jack-45. A connector similar to a telephone connector that holds up to eight wires, used for connecting Ethernet devices.
  - **“RS-232”**: An Electronic Industries Association (EIA) serial digital interface standard specifying the characteristics of the communication path between two devices using either DB-9 or DB-25 connectors. This standard is used for relatively short-range communication and does not specify balanced control lines. RS-232 is a serial control standard with a set number of conductors, data rate, word length, and type of connector to be used. The standard specifies component connection standards with regard to the computer interface. It is also called RS-232-C, which is the third version of the RS-232 standard, and is functionally identical to the CCITT V.24 standard.
  - **“Saturation”**: Chroma, chroma gain. The intensity of the color, or the extent to which

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a given color in any image is free from white. The less white in a color, the truer the color or the greater its saturation. On a display device, the color control adjusts the saturation. Not to be confused with the brightness, saturation is the amount of pigment in a color, and not the intensity. Low saturation is like adding white to the color. For example, a low-saturated red looks pink.

- **“Scaling”**: A conversion of a video or computer graphic signal from a starting resolution to a new resolution. Scaling from one resolution to another is typically done to optimize the signal for input to an image processor, transmission path or to improve its quality when presented on a particular display.
- **“SDI”**: Serial Digital Interface. The standard based on a 270 Mbps transfer rate. This is a 10-bit, scrambled, polarity independent interface with common scrambling for both component ITU-R 601 and composite digital video and four channels of (embedded) digital audio.
- **“Seamless Switching”**: A feature found on many video switchers. This feature causes the switcher to wait until the vertical interval to switch. This avoid a glitch (temporary scrambling) which normally is seen when switching between sources.
- **“SMPTE”**: Society of Motion Picture and Television Engineers. A global organization, based in the United States, that sets standards for baseband visual communications. This includes film as well as video and television standards.
- **“S-Video”**: A composite video signal separated into the luma (“Y” is for luma, or black and white information; brightness) and the chroma (“C” is an abbreviation for chroma, or color information).
- **“Sync”**: Synchronization. In video, sync is a means of controlling the timing of an event with respect to other events. This is accomplished with timing pulses to insure that each step in a process occurs at the correct time. For example, horizontal sync determines exactly when to begin each horizontal scan line. Vertical sync determines when the image is to be refreshed to start a new field or frame. There are many other types of sync in video system. (Also known as “sync signal” or “sync pulse.”)
- **“TCP/IP”**: Transmission Control Protocol/Internet Protocol. The communication protocol of the Internet. Computers and devices with direct access to the Internet are provided with a copy of the TCP/IP program to allow them to send and receive information in an understandable form.
- **“USB”**: Universal Serial Bus. USB was developed by seven PC and telecom industry leaders (Compaq, DEC, IBM, Intel, Microsoft, NEC, and Northern Telecom). The goal was easy plug-and-play expansion outside the box, requiring no additional circuit cards. Up to 127 external computer devices may be added through a USB hub, which may be conveniently located in a keyboard or monitor. USB devices can be attached or detached without removing computer power. The number of devices being designed for USB continues to grow, from keyboards, mice, and printers to scanners, digital cameras, and ZIP drives.
- **“VESA”**: Video Electronics Standards Association. A nonprofit number organization dedicated to facilitating and promoting personal computer graphics through improved standards for the benefit of the end-user. [www.vesa.org](http://www.vesa.org)

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- **“VGA”**: Video Graphics Array. Introduced by IBM in 1987, VGA is an analog signal with TTL level separate horizontal and vertical sync. The video outputs to a 15-pin HD connector and has a horizontal scan frequency of 31.5 kHz and vertical frequency of 70 Hz (Mode 1, 2) and 60 Hz (Mode 3). The signal is non-interlaced in modes 1, 2, and 3 and interlaced when using the 8514/A card (35.5 kHz, 86 Hz) in mode 4. It has a pixel by line resolution of 640×480 with a color palette of 16 bits and 256,000 colors.
  - **“YCrCb”**: Used to describe the color space for interlaced component video.
  - **“YPbPr”**: Used to describe the color space for progressive-scan (non-interlaced) component

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## 6.4 Revision History

The table below lists the changes to the Video Processor User Manual.

Format	Time	ECO#	Description	Principal
V1.0	2015-01-06	0000#	Release.	Vira
V1.1	2015-05-07	0001#	<ol style="list-style-type: none"><li>1. Add the optional module.</li><li>2. Update the menu tree.</li><li>3. Update the windows control program.</li></ol>	Vira
V1.2	2015-07-17	0002#	<ol style="list-style-type: none"><li>1. Add the menu operation instruction.</li><li>2. Add "Optional Module Installation and Replacement Instruction".</li></ol>	Vira
V1.3	2015-07-29	0003#	<ol style="list-style-type: none"><li>1. Update the windows control program.</li><li>2. Update the common Questions and solutions.</li><li>3. Update the specification.</li></ol>	Vira
V1.4	2015-12-02	0004#	<ol style="list-style-type: none"><li>1. Update the back panel.</li><li>2. Update the windows control program.</li><li>3. Update the software upgrade.</li><li>4. Update the specification.</li></ol>	Vira
V1.5	2018-06-15	0005#	<ol style="list-style-type: none"><li>1. Update XPOSE control</li><li>2. Update Specification</li></ol>	Fanny