X3

USER MANUAL

RGBlink®

CONTENTS

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

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.

Chapter 1 Your Product

1.1 In the Box

AC Power Cord	**USB Cable**	**Network Cable**
HDMI to DVI Cable	**DVI Cable**	**SDI Cable**
Screw Driver	**Antistatic Bag**	

Note:

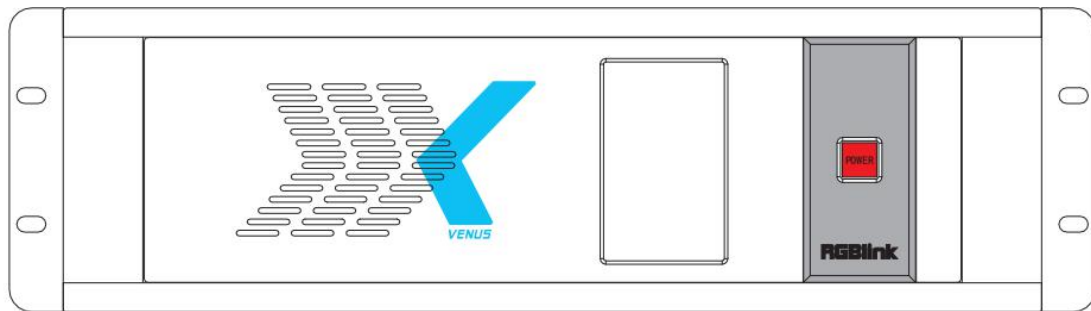AC Power Cable supplied as standard according to destination market.

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.

1.2.1 Front Panel

1	**OLED Panel** Show the input shot and output slot information, device status, COM. Version, IP address and serial address.	
2	**POWER** 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
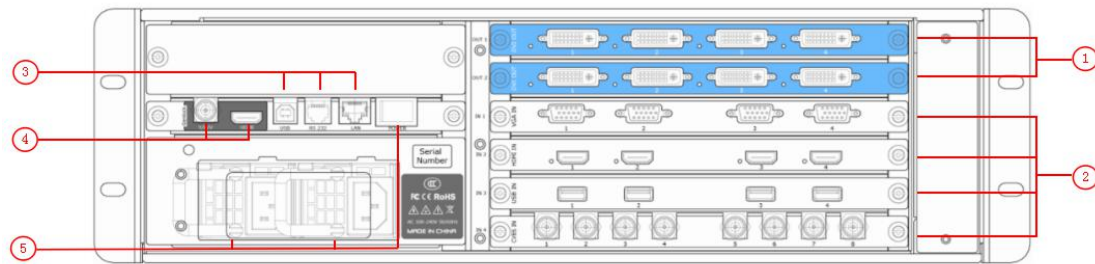
Chassis Module Structure				
1	2 output module slots	4	Genlock interface
2	4 input module slots	5	Power Switch and Power Module
3	Communication ports		

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.

Output Interface

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

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 and1HDMI output. Genlock Inout Input signal from the controller or signal generator and other device. HDMI Input 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
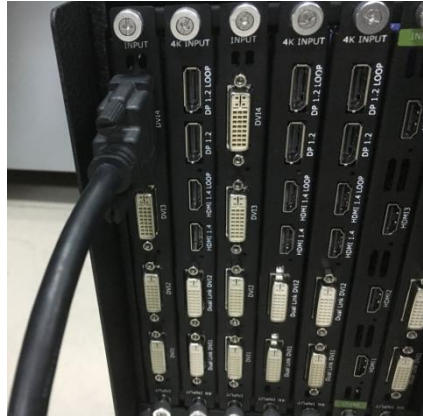
Following is the dimension of x3 for your reference:
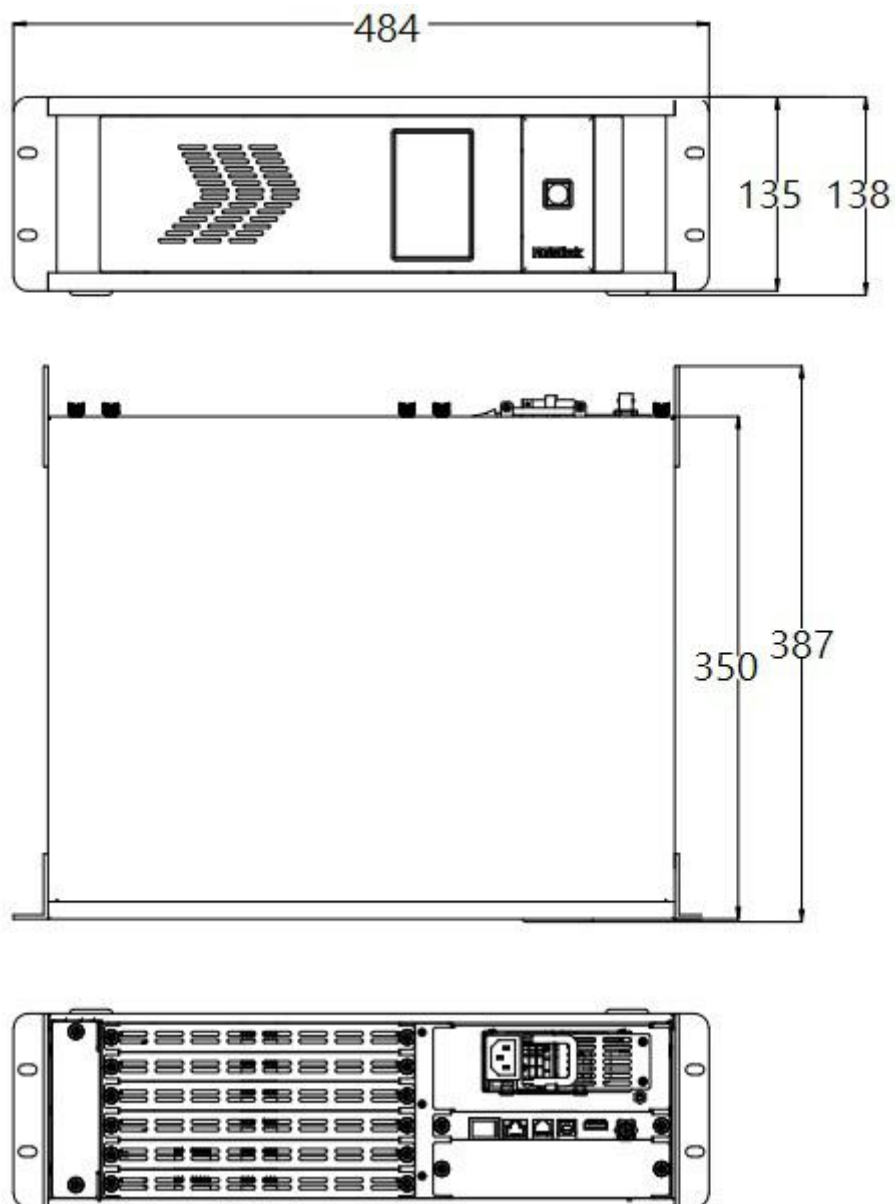
Chapter 2 Installing Your Product

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

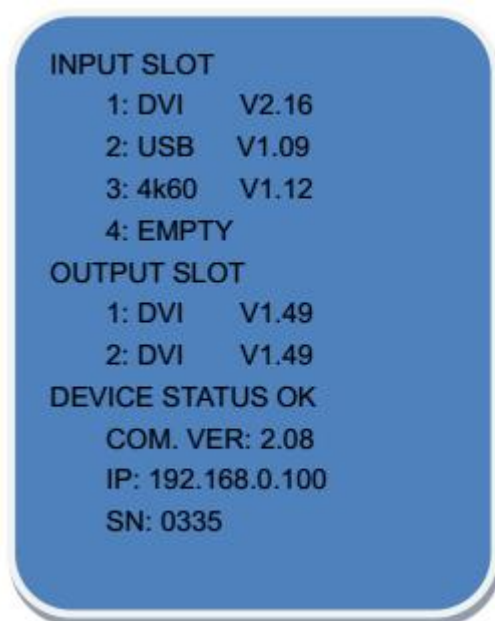Connect IEC cable to device and plug into wall socket. Turn on power at wall socket.

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.

Chapter 3 Using Your Product

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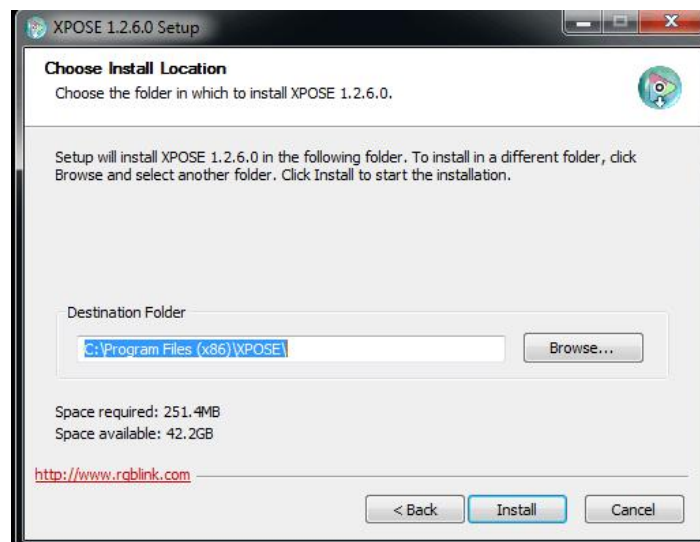
Double click icon, it will pop-up the installer language box, select the language, for example, select "English", and click "OK" to confirm.

Click "Next" to install:

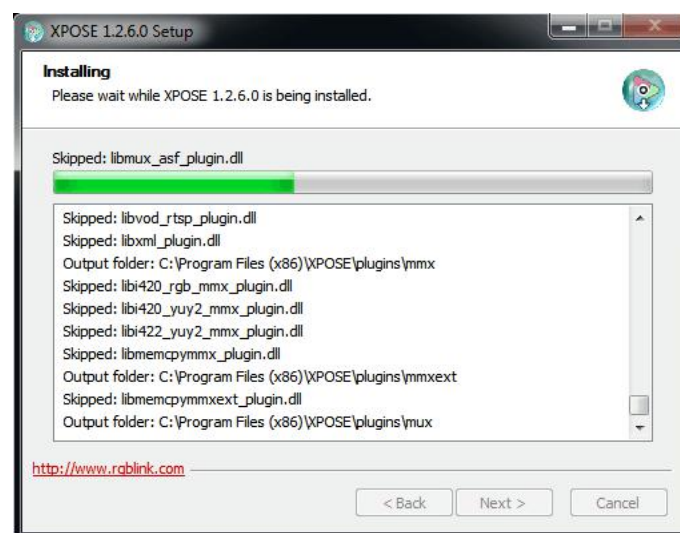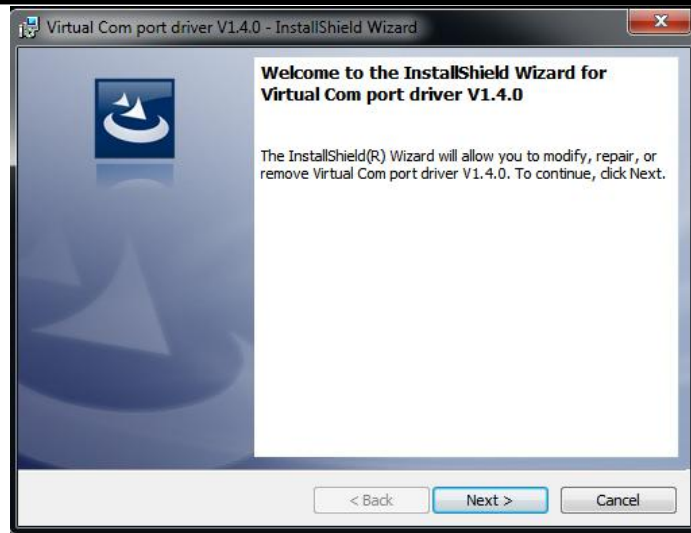Select "Browse..." to select the XPOSE software install location:

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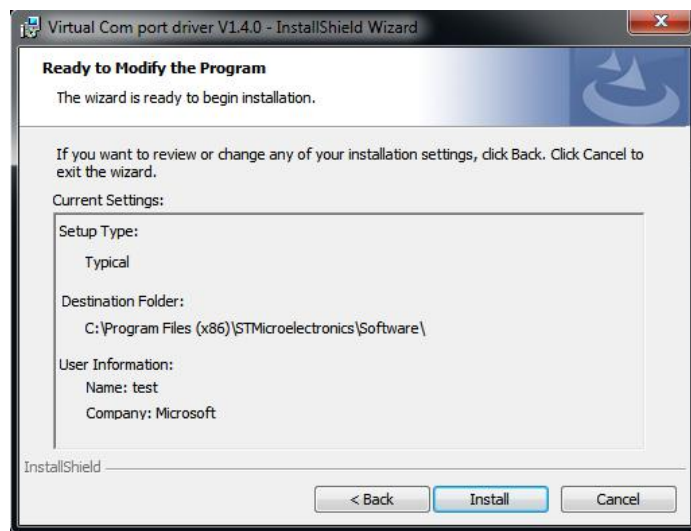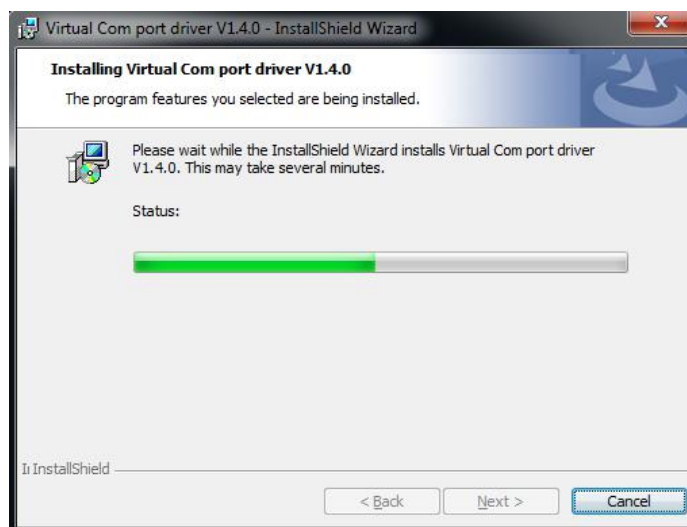
Click "Install":

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

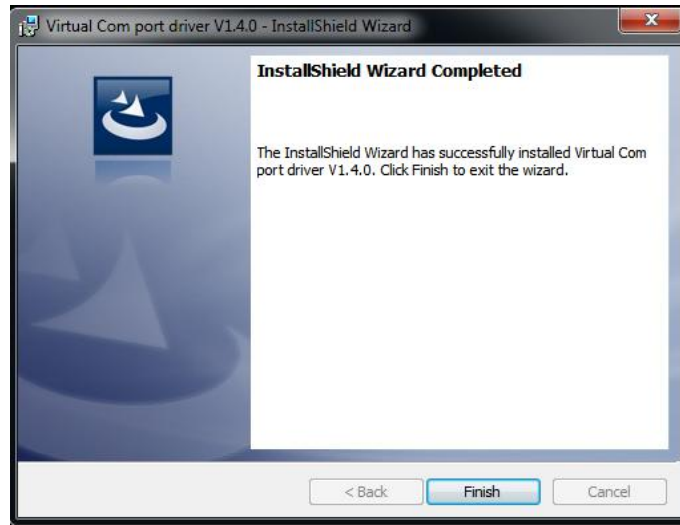If user install the XPOSE software for the first time, click "Next

Then click "Install", as shown in the figure below:

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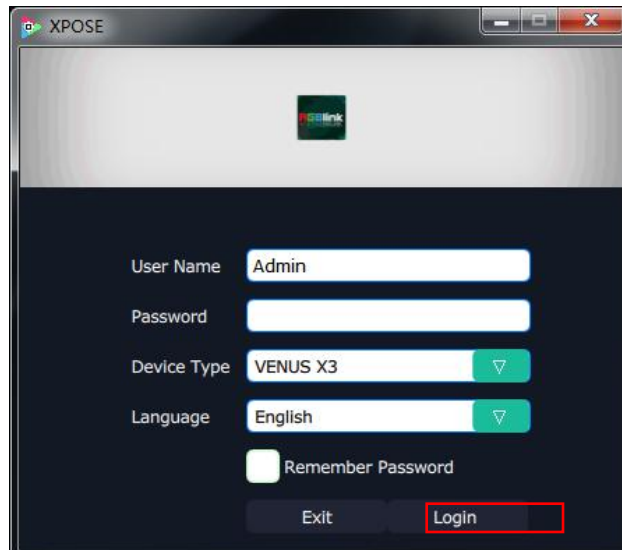

Click "Finish" and is ready to run the XPOSE :

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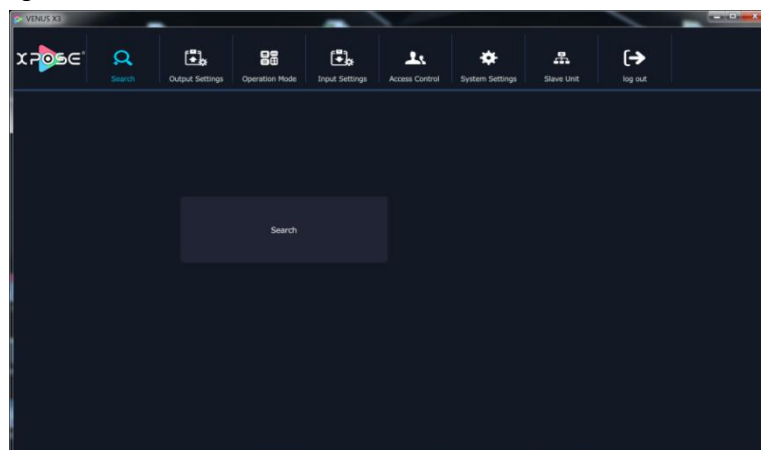
If user want to change the language to Chinese, click the drop down arrow after "Language" and select "Chinese", as shown in the figure below, then click "Login" to enter into the XPOSE.

X POSE management software interface is shown as follows.

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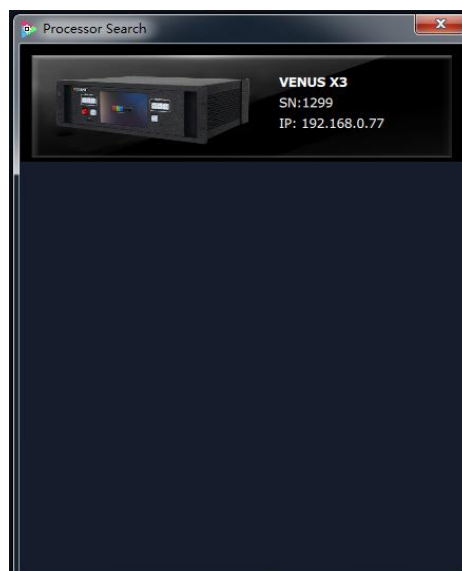
Output Settings, Operation Mode, Input Settings, Access Control,System Settings,Slave Unit and Logout. In the following parts, we will introduce these in detail.

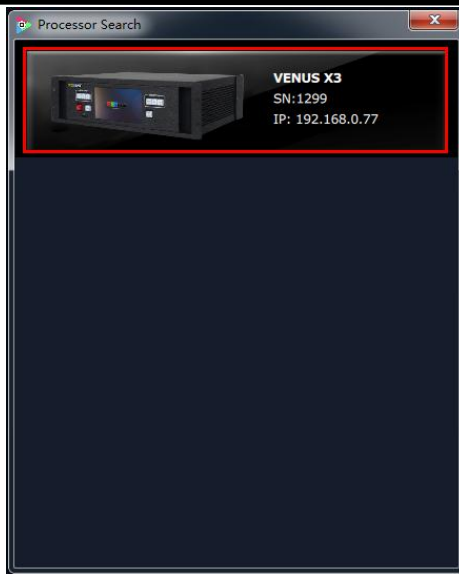## 3.2.2 Connect with the X3

Click the shortcut "Search" on the operation interface.
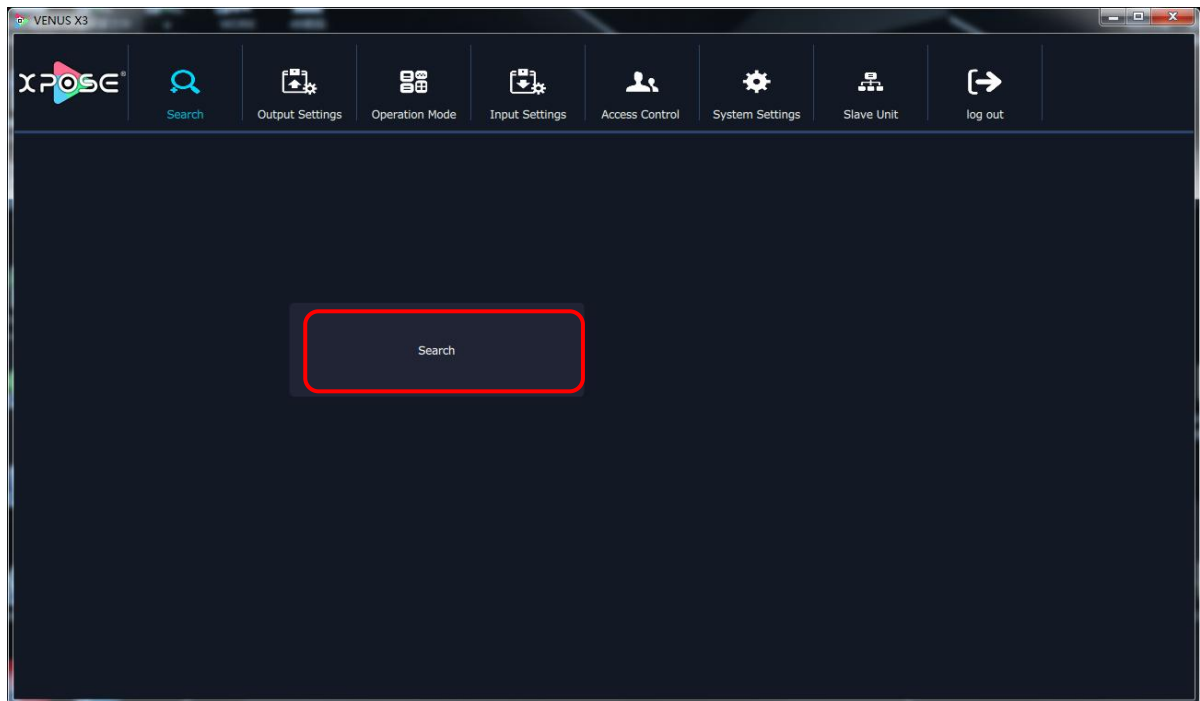
Then it will search the X3, and show the device name, device number and IP after search, as shown in the figure below:

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.
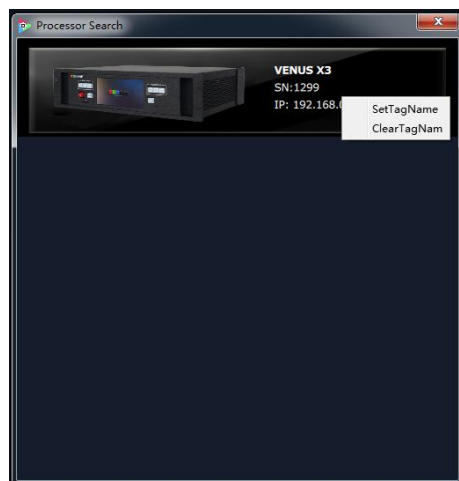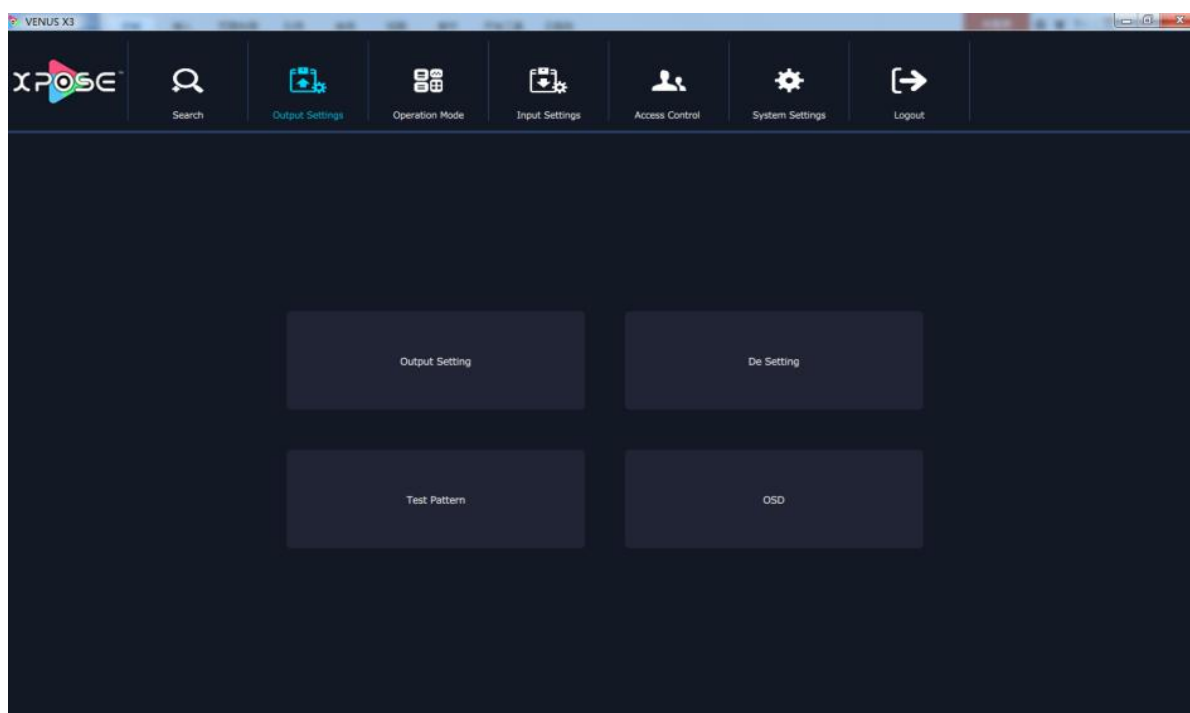

The software will automatically synchronize after connection, as shown in the figure below:
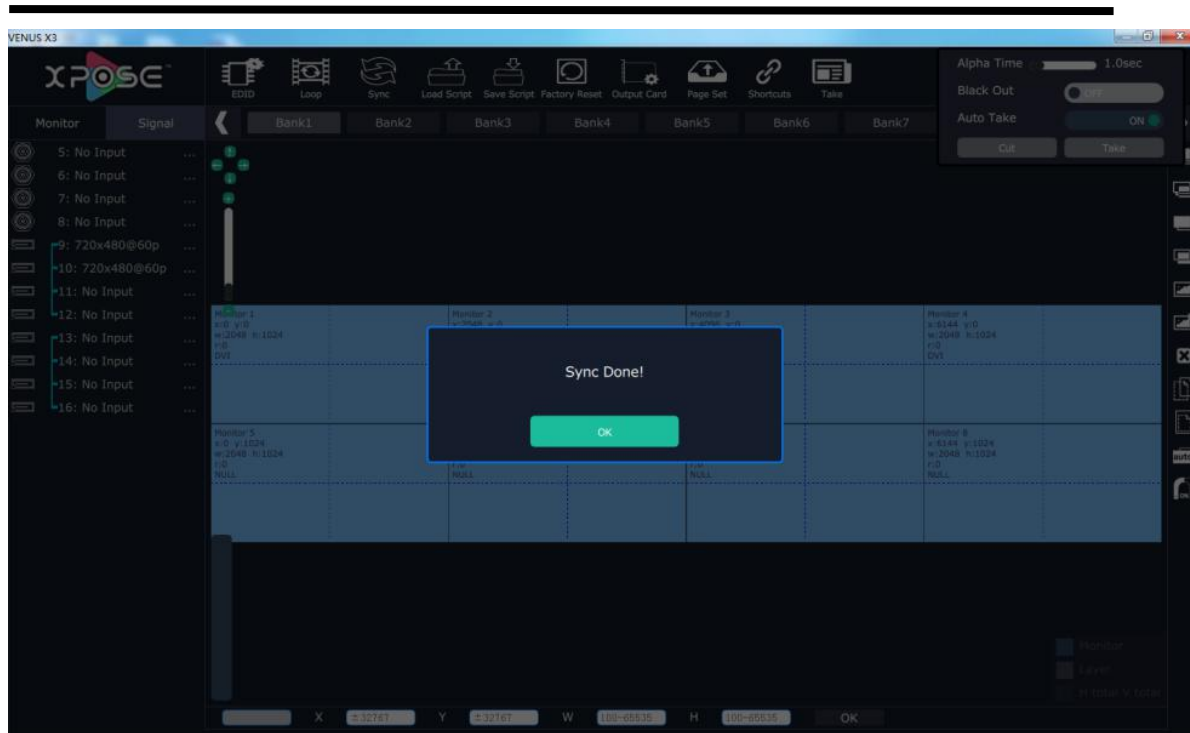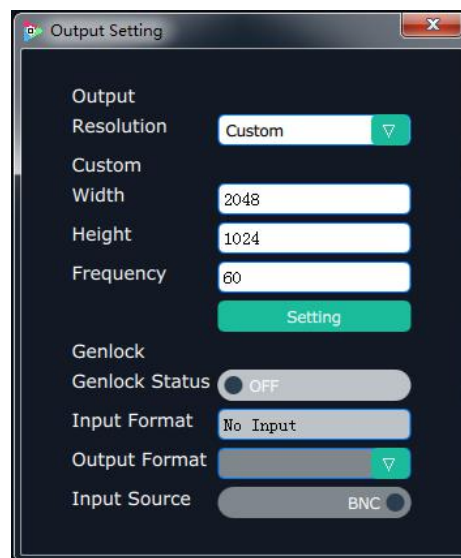
3.2.3 Output Settings

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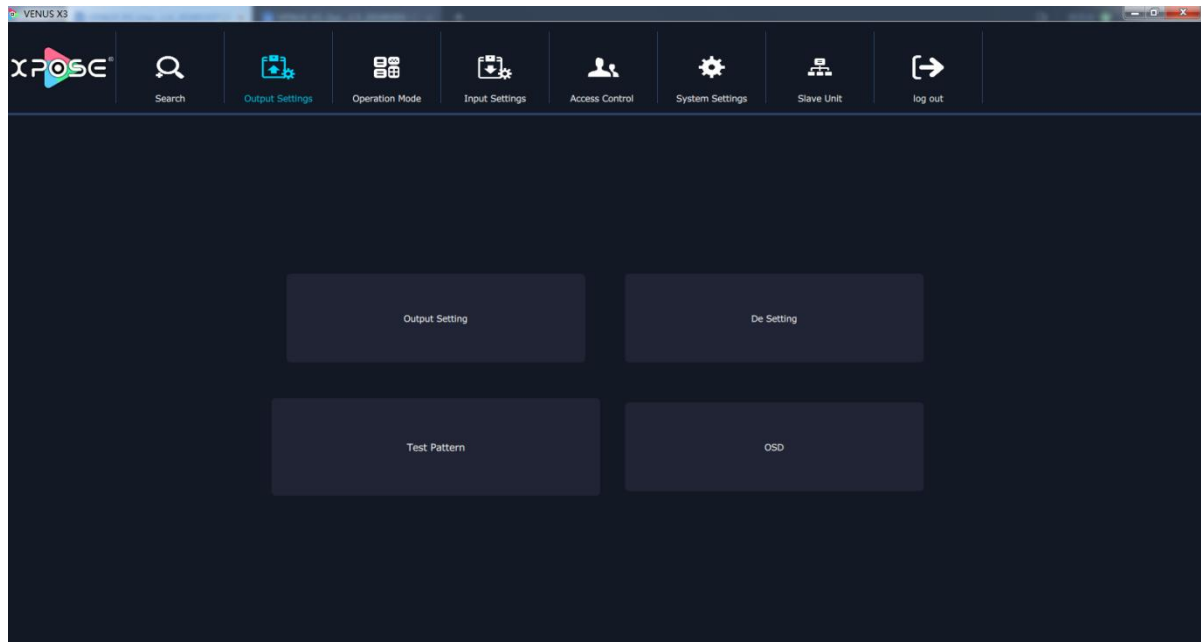
Output: Click the drop down arrow after the format, and select the output resolution in the pull-down menus according to actual need.

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.
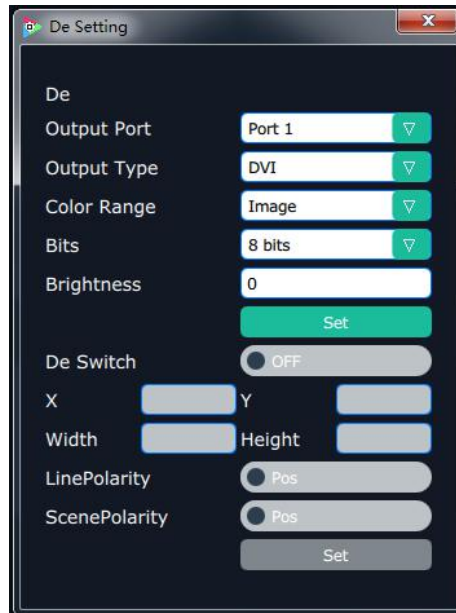**Output Type:** Select DVI or HDMI.
Color Range: Select image or video.
Bits: 8 bits can be selected if the output type is DVI. 8 bits, 10 bits and 12 bits can be selected if the output type is HDMI.
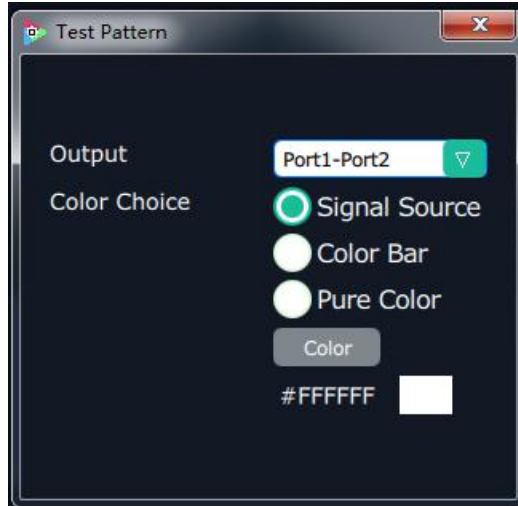**Brightness:** The brightness adjustment range is between 0~128. Click "**Set**" to confirm.
De Switch: Enable or disable the De function by sliding the De Switch.
De Setting: The settings for De include X, Y, width, height, line polarity and scene polarity.

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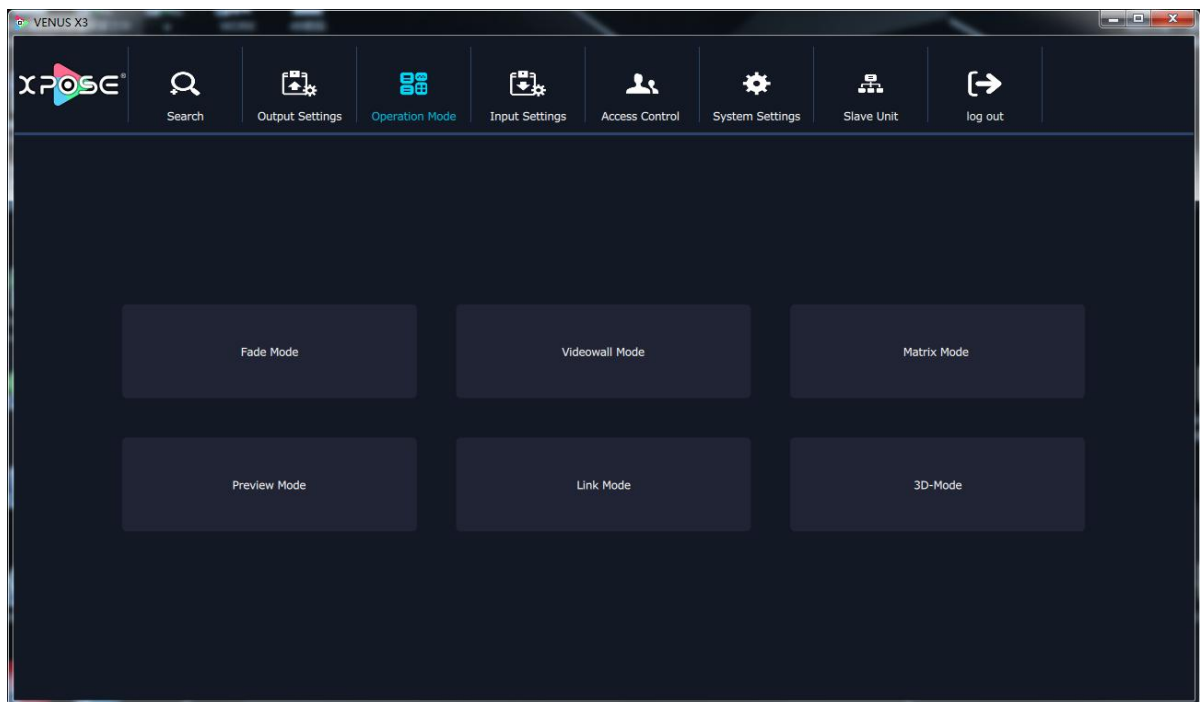
Fade Mode, Videowall Mode, Matrix Mode, Preview Mode, Link Mode and 3D-Mode are included in operation mode, specific as follows:

Videowall Mode

Click the "Videowall Mode", and enter to the interface as follows:
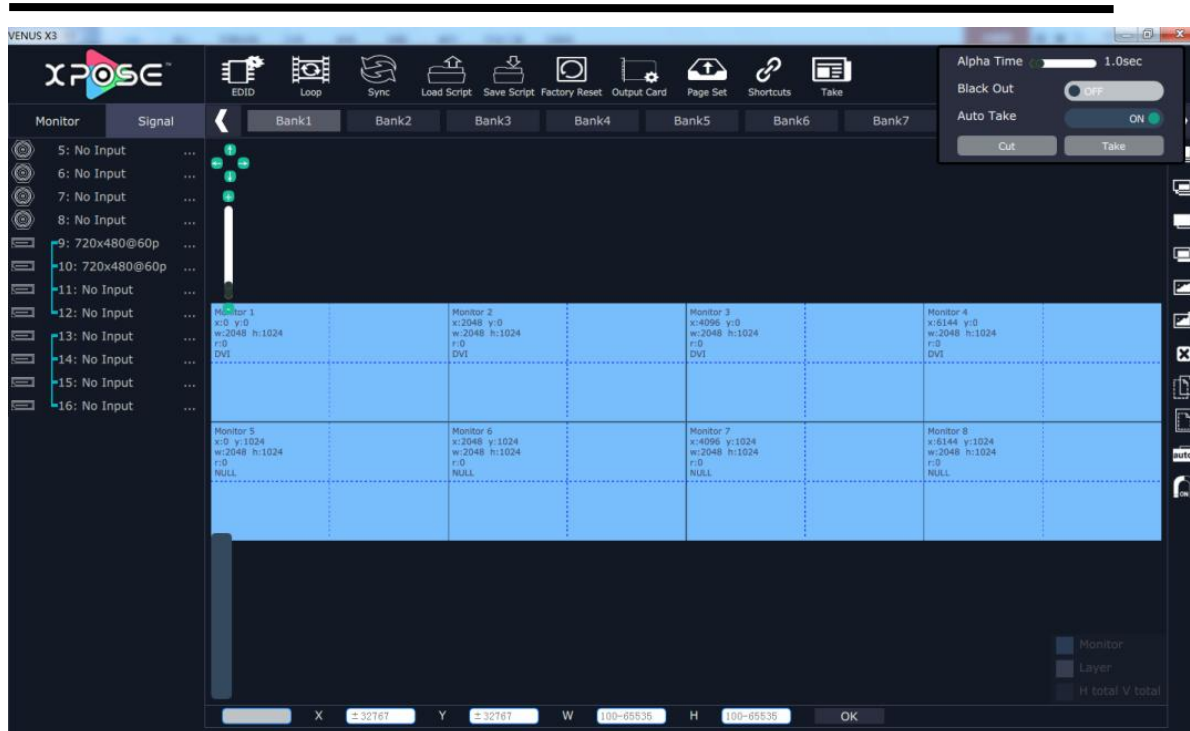
Signal List

The signal list is shown as follows:

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".

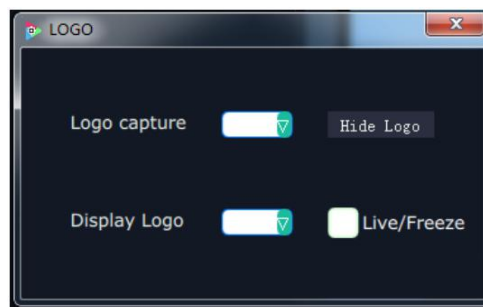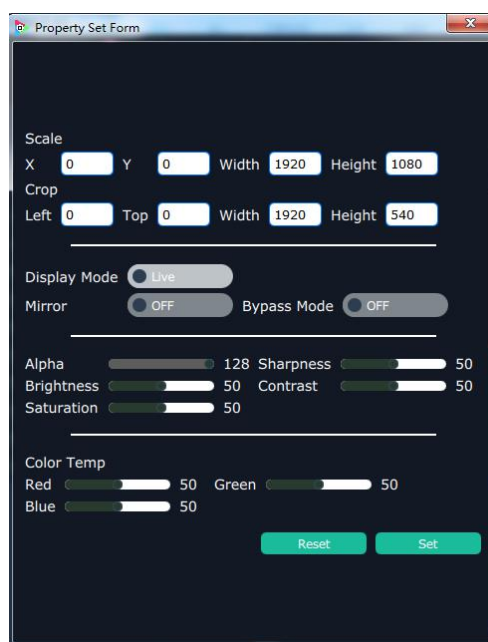Live/Freeze: Select "Live/Freeze", the image is frozen. Cancel it, the image is live.

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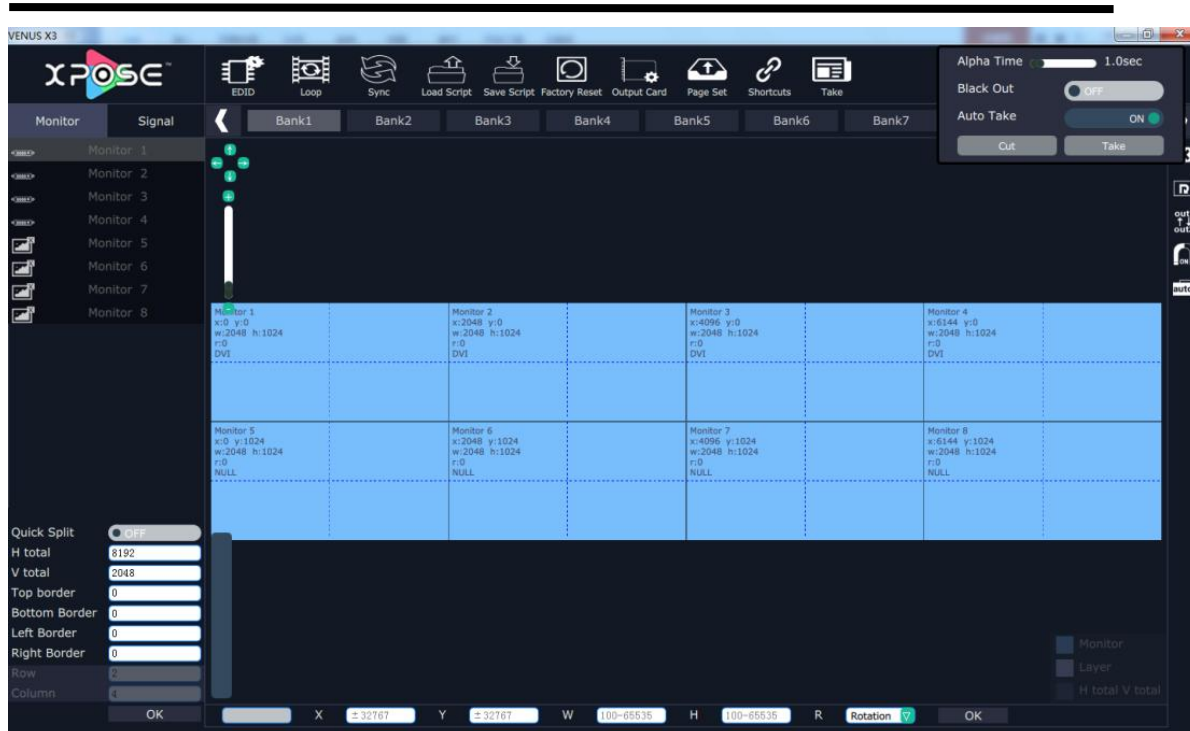
In videowall mode, there are max 16 image in the output interface, group of two outputs, one output module can display 8 images.

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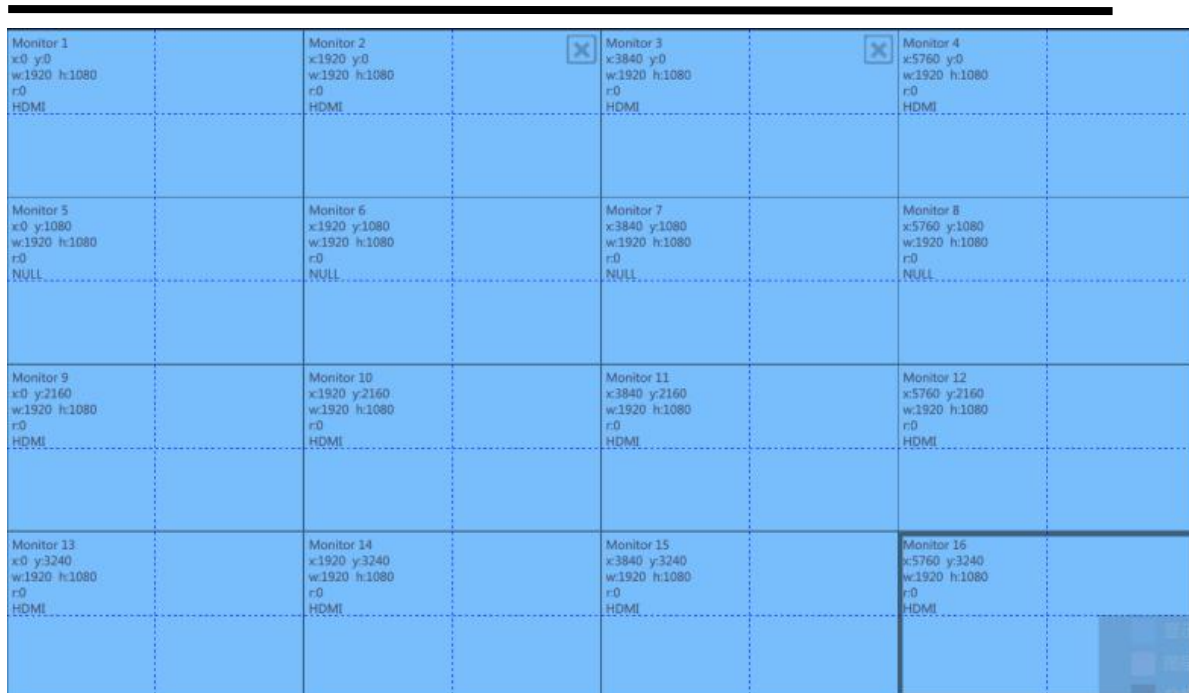
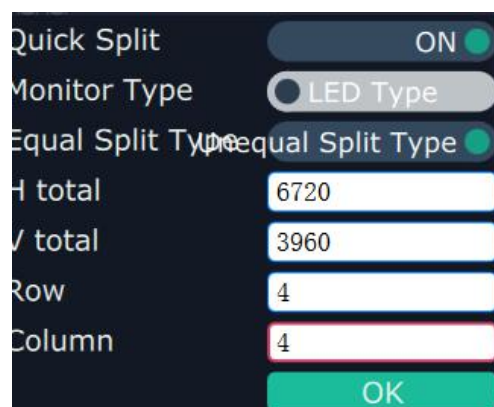Unequal Split Type: User can custom the H total, V total, row and column, for example, set H total as 6720, V total as 3960, Row and Column as 4, as shown in the figure below:
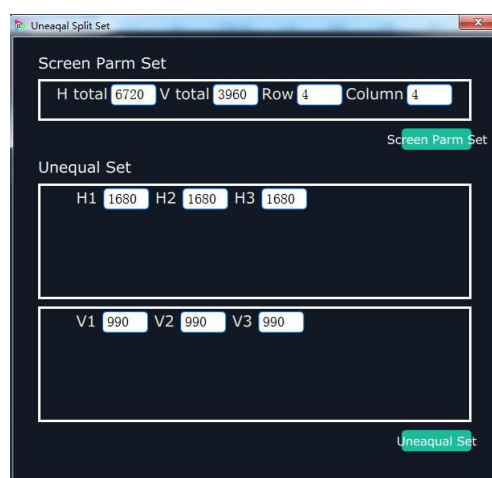

Click "OK", it will pop up windows as below:

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:

Monitor 1 x:0 y:0 w:960 h:800 r:0 HDMI		Monitor 2 x:960 y:0 w:1920 h:800 r:0 HDMI		Monitor 3 x:2880 y:0 w:960 h:800 r:0 HDMI	Monitor 4 x:3840 y:0 w:1920 h:800 r:0 HDMI	
Monitor 5 x:0 y:800 w:960 h:1080 r:0 NULL		Monitor 6 x:960 y:800 w:1920 h:1080 r:0 NULL		Monitor 7 x:2880 y:800 w:960 h:1080 r:0 NULL	Monitor 8 x:3840 y:800 w:1920 h:1080 r:0 NULL	
Monitor 9 x:0 y:1880 w:960 h:1000 r:0 HDMI		Monitor 10 x:960 y:1880 w:1920 h:1000 r:0 HDMI		Monitor 11 x:2880 y:1880 w:960 h:1000 r:0 HDMI	Monitor 12 x:3840 y:1880 w:1920 h:1000 r:0 HDMI	
Monitor 13 x:0 y:2880 w:960 h:1080 r:0 HDMI		Monitor 14 x:960 y:2880 w:1920 h:1080 r:0 HDMI		Monitor 15 x:2880 y:2880 w:960 h:1080 r:0 HDMI	Monitor 16 x:3840 y:2880 w:1920 h:1080 r:0 HDMI	

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:
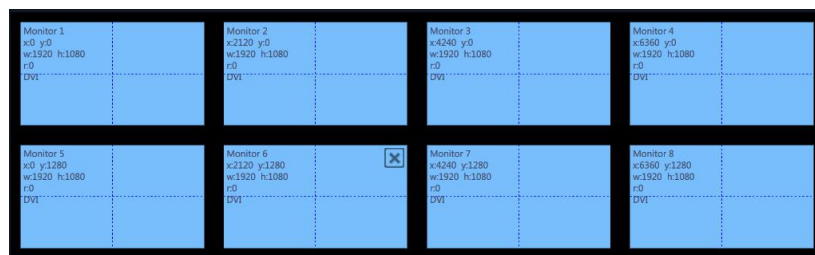

Note:Top border and bottom border, left border and right border are changed equivalently. For example, if set top border as 100, bottom border will be changed to 100 automatically, and if set left border as 200, right border will be changed to 200 automatically.

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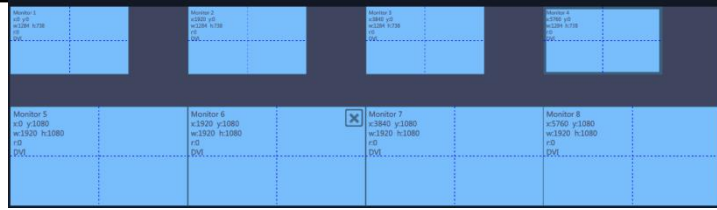
Rotation: Select the monitor, and set the rotation as 0°, 90°, 180° and 270° in the bottom of the interface. Click "**OK**" to confirm. As shown in the figure below:


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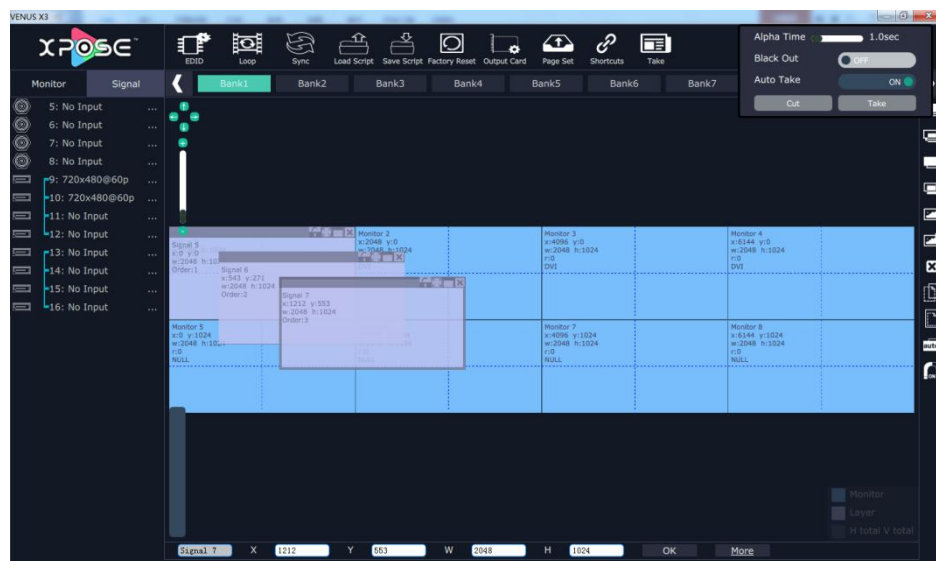
Adjust Layer: Two ways can change the size and location of the opened layer:

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.

| Signal 1 | X | 2470 | Y | 2190 | Width | 1024 | Height | 768 | OK |

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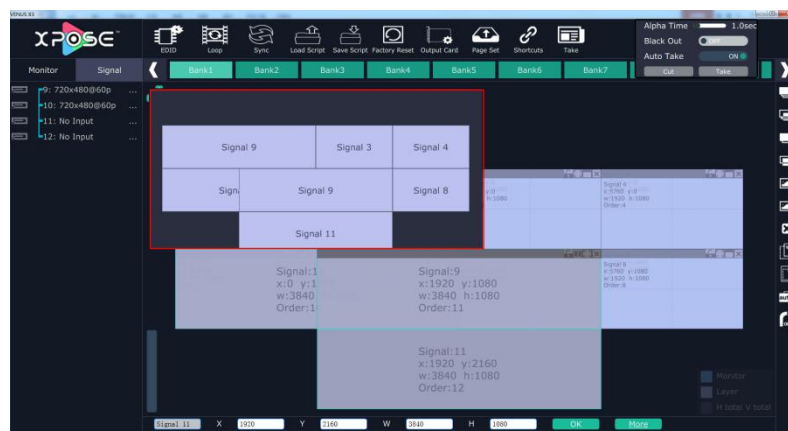
User can preview the layer layout more directly, and switch it to the program output.

EDID

Click the EDID shortcut " EDID ", and pop-up window as follows:
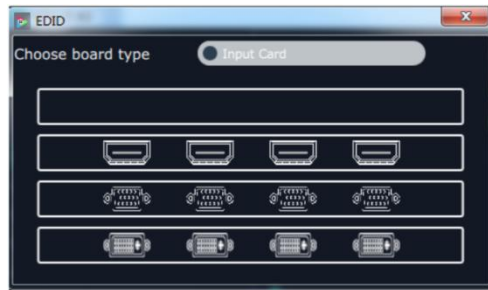
The special display project or LED display application would like to require special resolution settings to meet the requirement. Select the input or output board to read and write the EDID. As shown in the figure below:
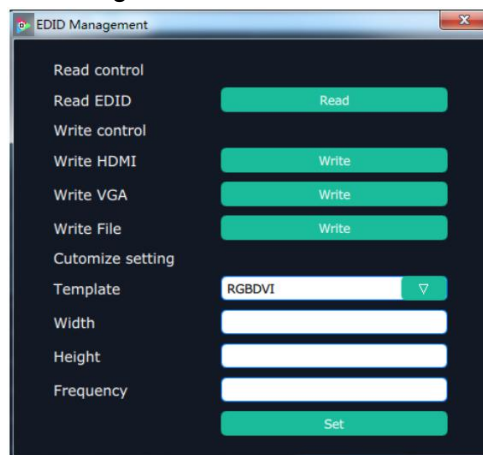
If select the 4K input card, as shown in the figure below:
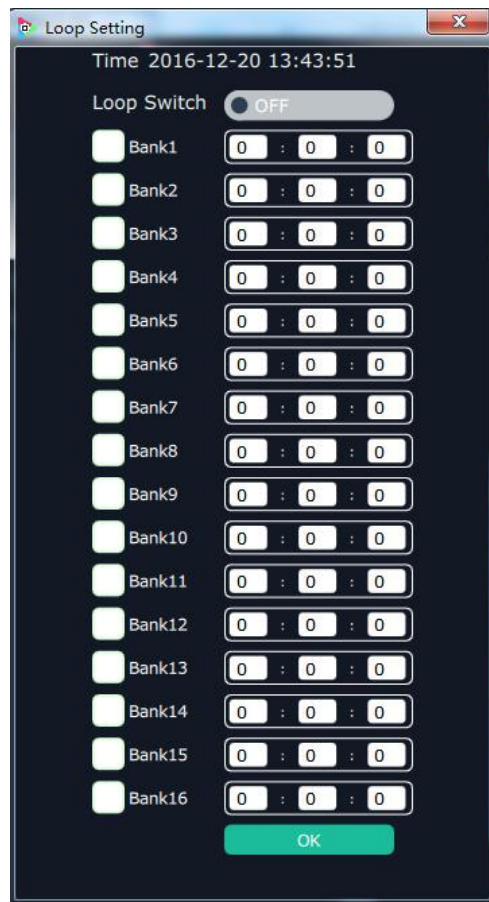
Click the input port, and set the width, height and frequency. Click "**Set**" after setting. Select "**Reset**", all the setting will be recover to factory setting.

Loop

Click the loop shortcut " ", 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 " " to synchronize all current data of device and XPOSE.

Load Script

Click the load script shortcut " ", user can load the data from the computer.

Save Script

Click the save script shortcut " ", user can save the data to the computer.

Factory Reset

Click the factory reset shortcut " " to reset to factory settings.

Out Card Set

Click the out card set shortcut " ", and pop-up window as follows:

Click any output, and pop-up window as follows:
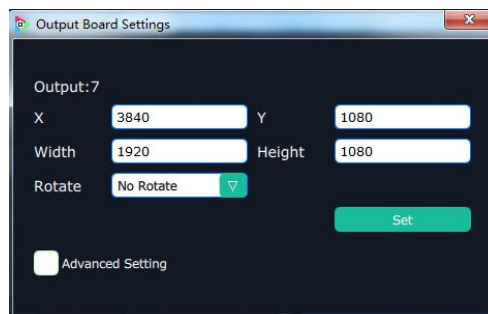
X, Y, width, height, rotate can be set.

Click "Advanced Setting", pop-up window as follow:
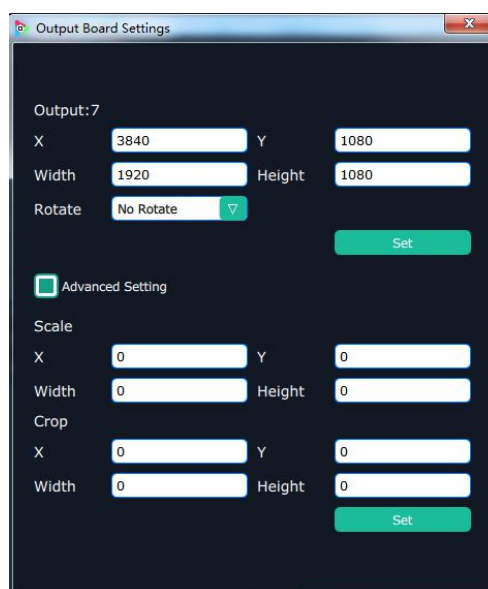
If user need to connect to the LED display, or there is deviation in splitting, enter to the advanced setting, and scale or crop the image.

Page Set

Click the shortcut " Page Set ", and pop-up window as follows:
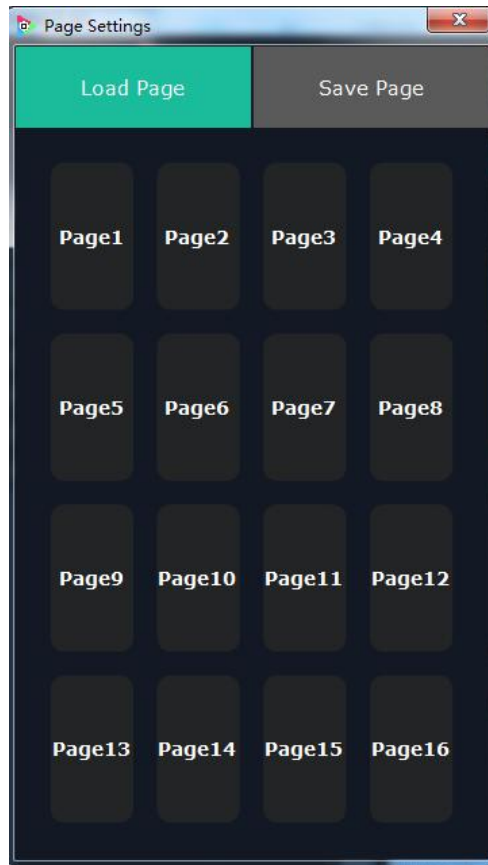
Save Page: Click any one of page 1~page 16. The button light will be on and then turn to gray if save the scene successfully.

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:
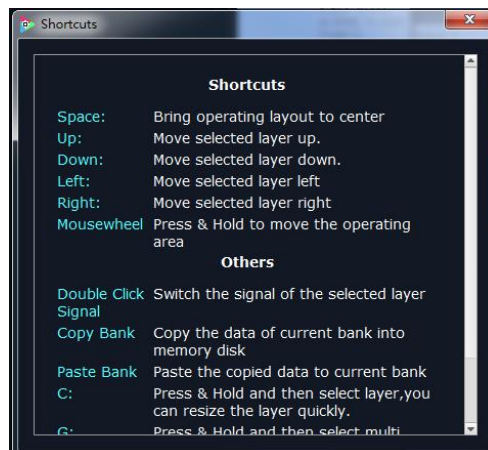
Use shortcut key to operate fast and easily.

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:

Alpha Time	1.0sec
Black Out	OFF
Auto Take	ON
Cut	Take
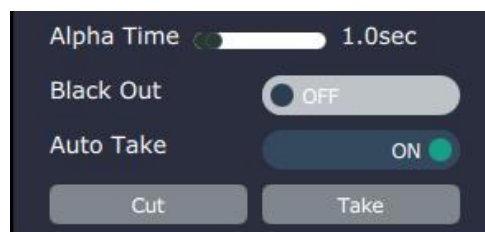
Set the alpha time, and the adjustment range is 0~10S.

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:
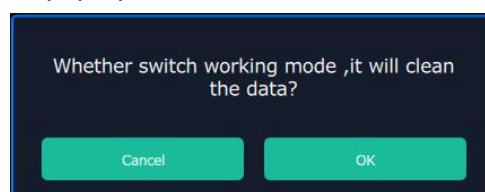
Whether switch working mode ,it will clean the data?

Cancel   OK

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:
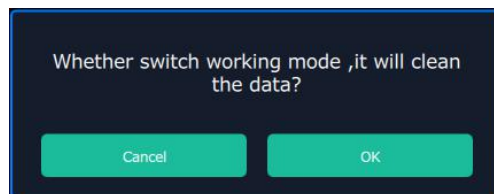
Click "OK", and the system will synchronize the data, about 5 seconds later, it will enter the interface as follows:
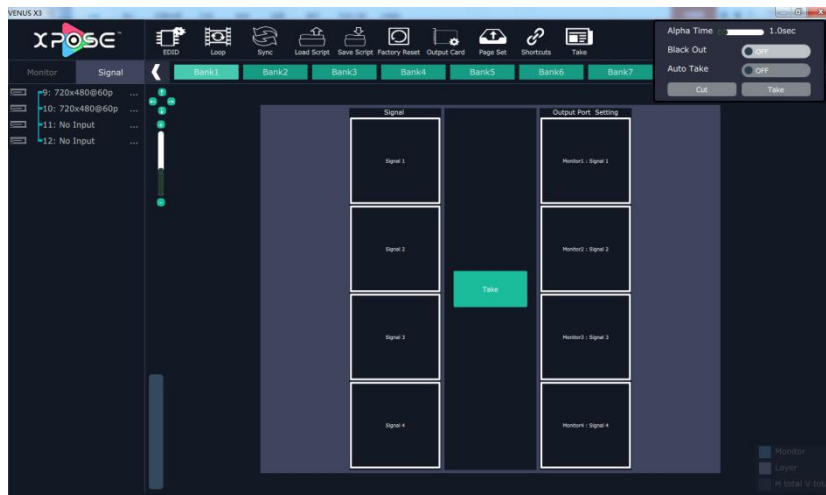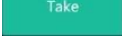
In matrix mode, any operations are unavailable except signal selection, bank selection, alpha

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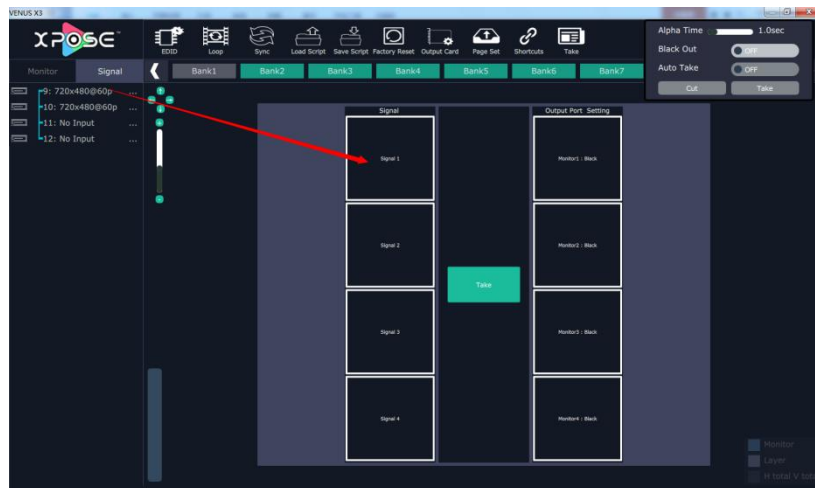
Note: Click the monitor (the border of the monitor will turn to red), then double click the signal (the border of the monitor will turn to yellow), the signal will be switched to the monitor.

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:
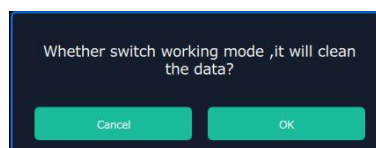
Click "OK", the system will synchronize the data, and it will finish about 5 seconds later, click "OK", it will enter the interface as follows:
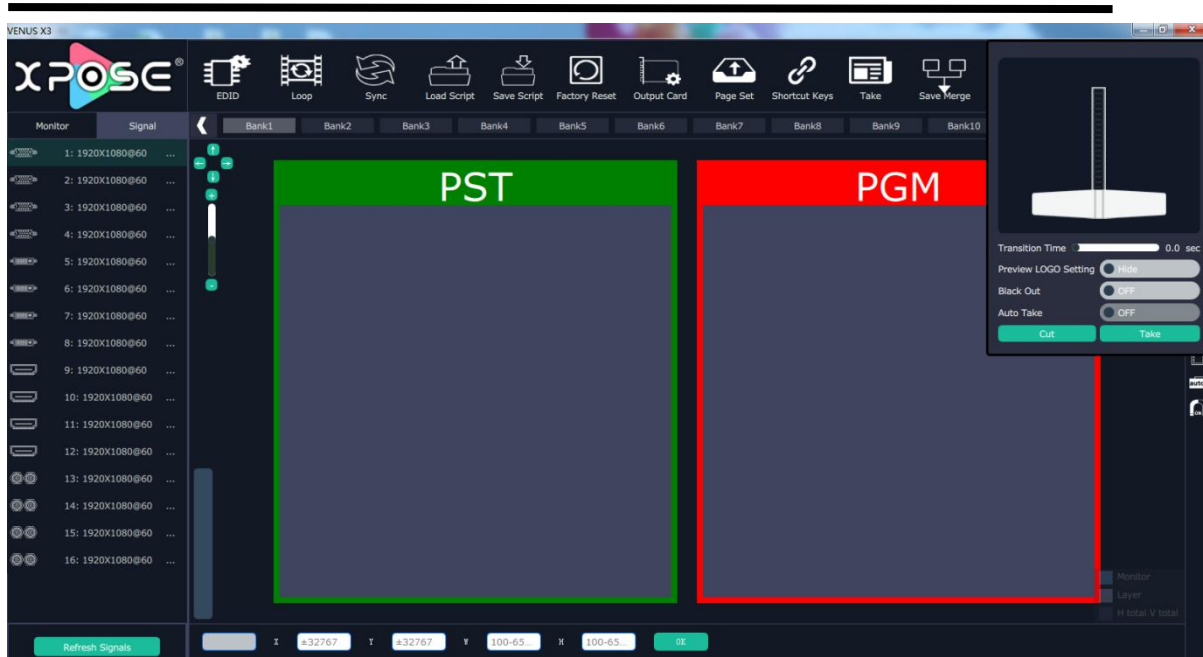
In preview mode, Default outputs 2.4.6.8 as preview channel and outputs1.3.5.7 as program channel.

All scene settings are done in PST and display on preview monitor. Users can drag the signal from the singal 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:
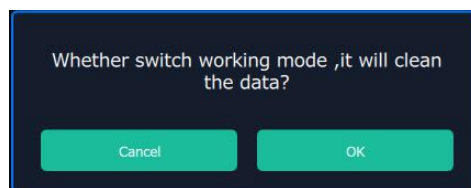
Click "OK", the system will synchronize the data, and it will finish about 5 seconds later, click "OK", it will enter the interface as follows:
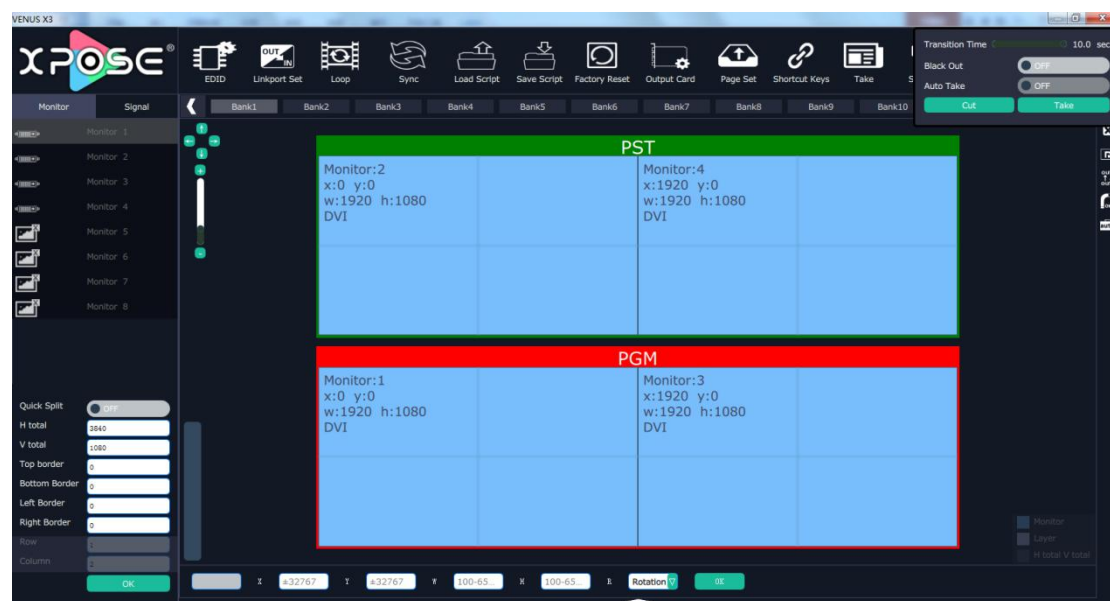
The link mode can achieve 5 pictures to 5 pictures seamless switching. It needs to connect output 6 and output 8 to the inputs ports that support for same signal, for instance, if output 6 is DVI connector, then link it to DVI input or HDMI input via adapter; if it is HDMI output, link it to HDMI input 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:
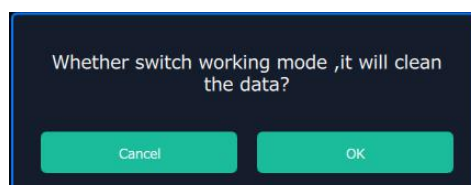
Click "OK", the system will synchronize the data, and it will finish about 5 seconds later, click "OK", it will enter the interface as follows:
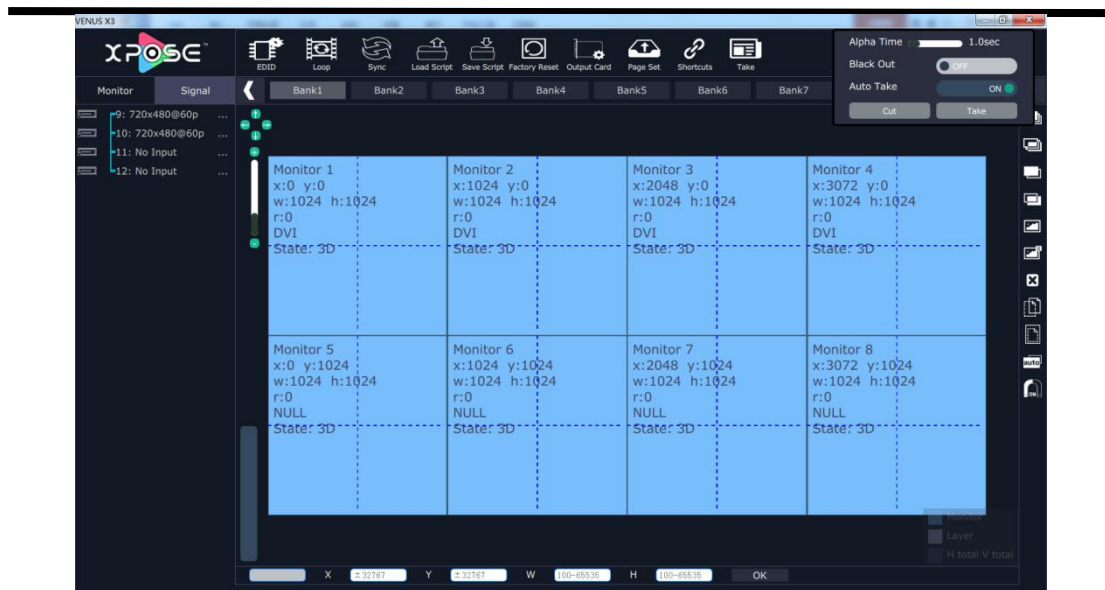
Default 2D-Mode, right click the signal, and select "Set Input 3D Type", it will enter the interface as follows:
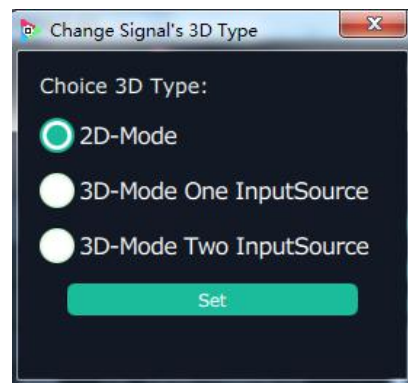
User can select "3D-Mode One InputSource" or "3D-Mode Two InputSource". If select "3D-Mode One InputSource", it will show "3D" on the signal, as shown in the figure below:

If select "3D-Mode Two InputSource", it will show "3D-1" and "3D-2" on the signal, as shown in the figure below:
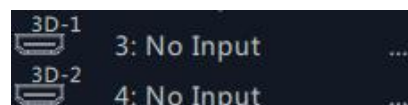
The other operations are same with "**Videowall Mode**".

3.2.5 Input Settings

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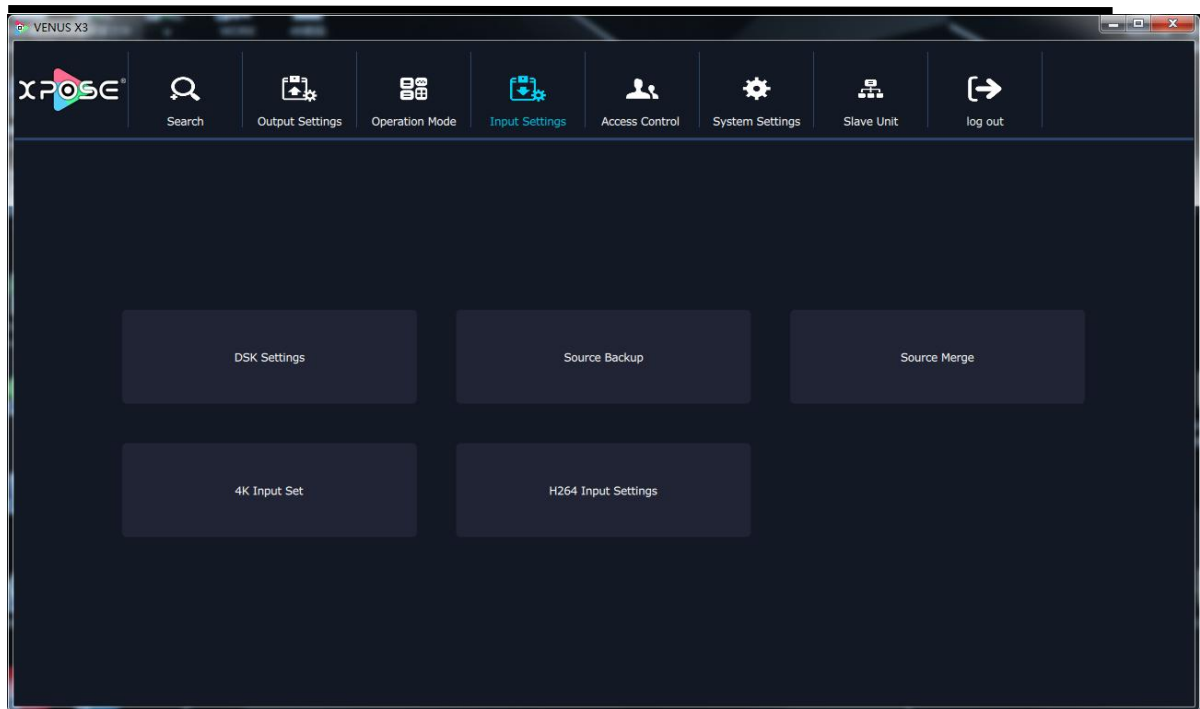
DSK settings, source backup, source merge , 4K input set and H264 Input Settings are included in input settings, specific as follows:

DSK Settings

Click the "DSK Settings", and pop-up window as follows:
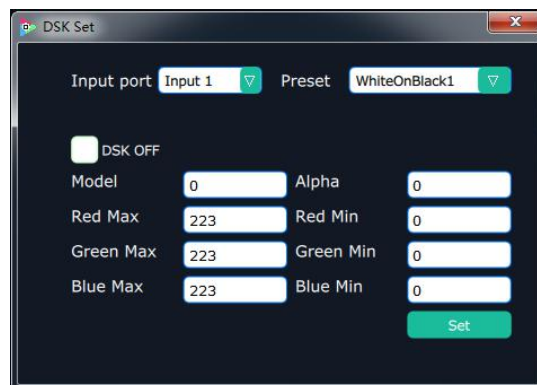
Select DSK ON, as shown in figure , then set the input ports, including preset selection, custom mode, alpha and color setting. Click "**Set**" to confirm.

Source Backup

Click the "Source Backup", and pop-up window as follows:
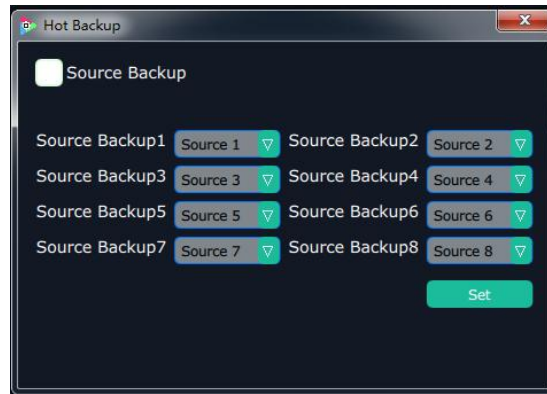
Enable the hot backup function, as shown in figure , and set the backup signal for Hot Backup 1 to Hot Backup 8. It will switch to the backup signal if the signal is interrupted.

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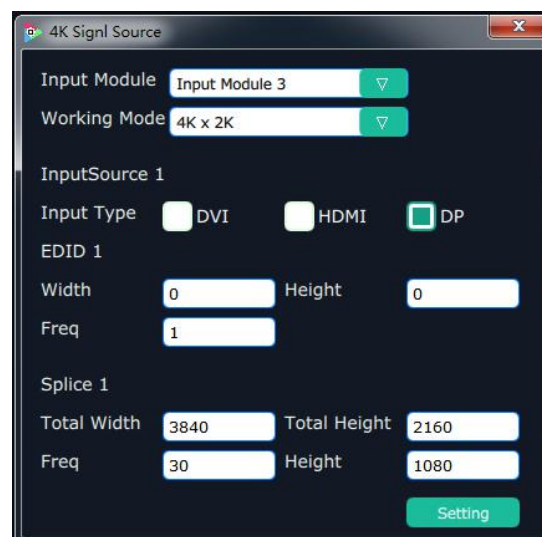
Input Module: Click the pull down arrow to select the 4K input module.
Source:

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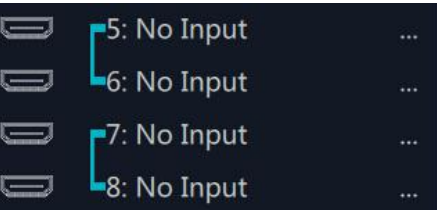
3. Drag any signal to the monitor, the two outputs will combine to a picture with 3840x1080 automatically, shown as follows:

H264 Input Settings

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

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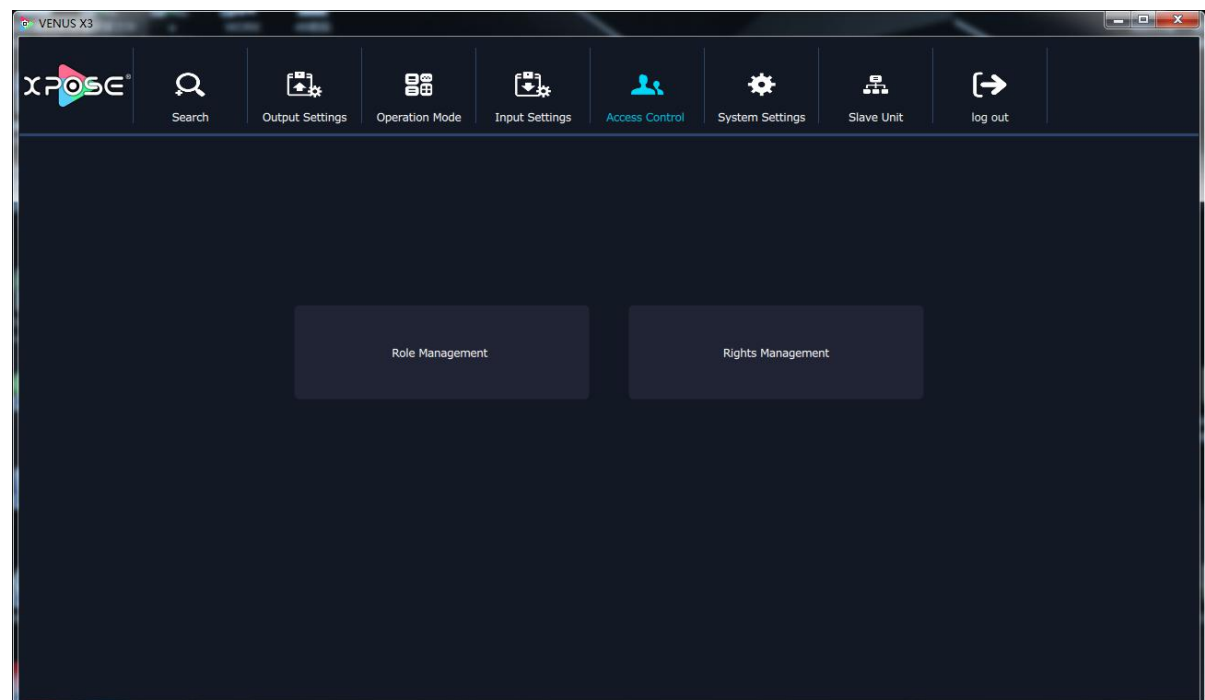
Role management and rights management are included in access control, specific as follows:

Role Management

Click the "Role Management", and pop-up window as follows:
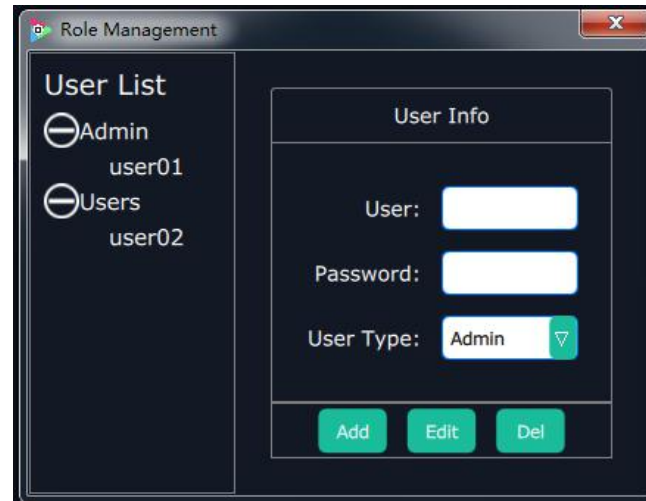
Add: Input the user name and password, and select the user type as "Admin' or "Users", click "**Add**" after setting.

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:
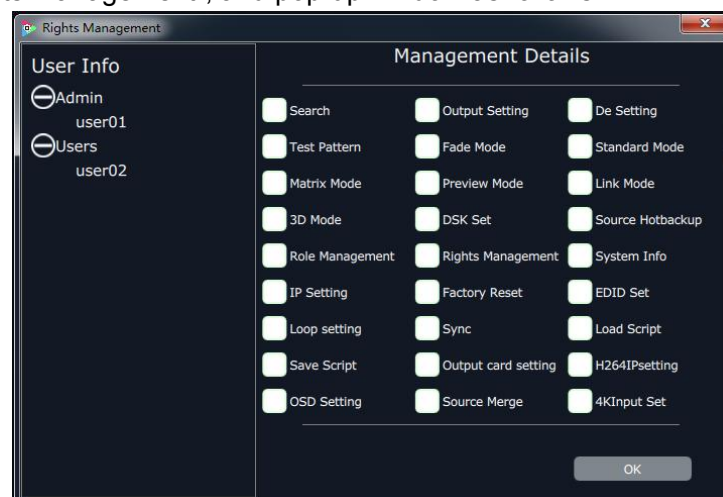
Select the admin or users in user's list, then click the rights in "Managements Detail". Click "**OK**" after setting. User can operate the rights that selected.

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 mange all the users, including admin user and users user.

3.2.7 System Settings

Click the "System Settings", and enter the interface as follows:
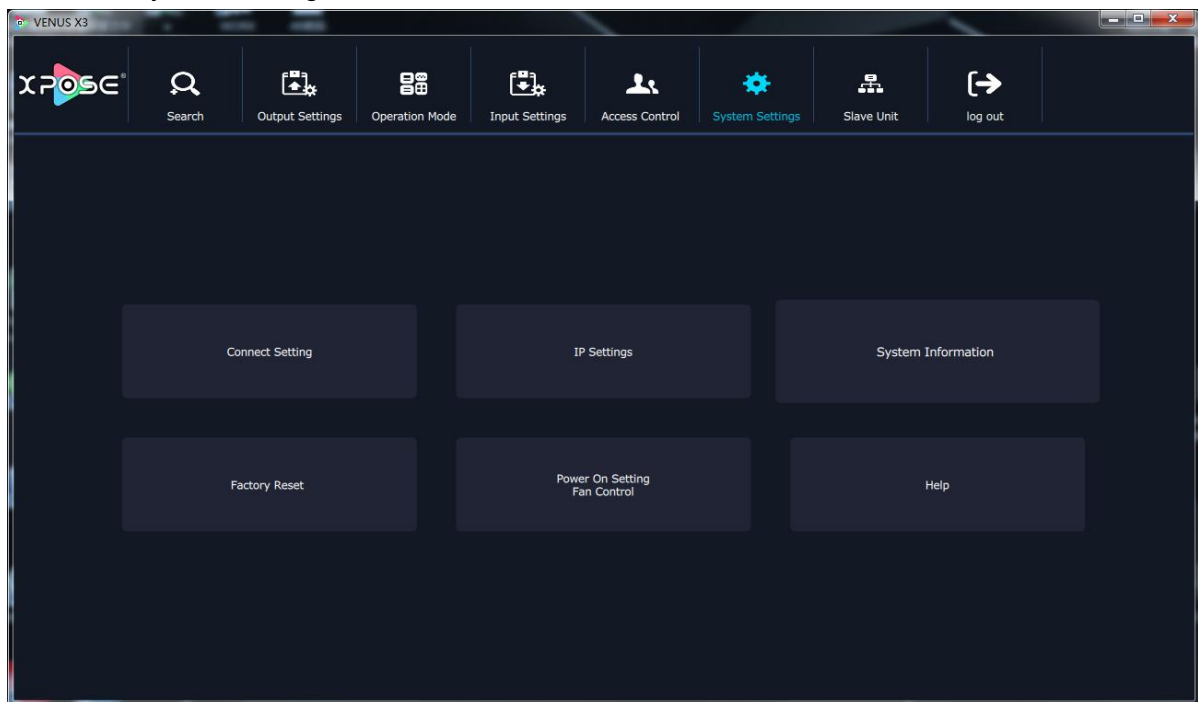
Connect Setting, System information, IP settings, factory reset, power on settings and help document are included in system settings, specific as follows:

Connect Setting

Click the "Connect Setting", and pop-up window as follows:
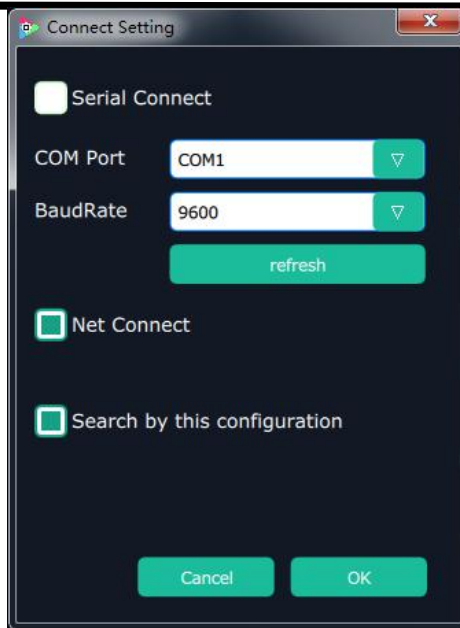
Select the serial connect and net connect, the software will search all the devices if not select "Search by this configuration".

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:
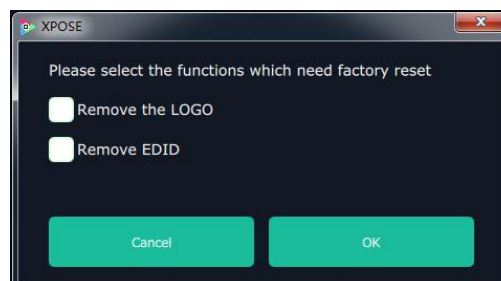
Select "Remove the LOGO", and click "**OK**", the LOGO will be removed.
Select "Remove EDID", and click "**OK**", the EDID will be removed.

Power On Setting Fan Control

Click the "Power On Setting Fan Control", and pop-up window as follows:
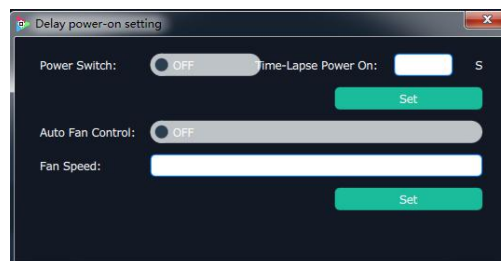
Delay Power-On Setting
Power Switch : On or Off.
Time-Lapse Power on: rang from 0-255S
Auto Fan Control/Fan Speed: On/Off, choose **On** the device will adjust the fan speed according current working temperature;choose **Off**,users can manually type in the Fan Speed, rang from 0-100.

Help Document

Click "Help Document", it will connect to the user manual, which is much convenient for

users.

3.2.8 Slave Unit
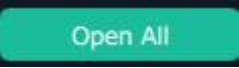
Click the "Slave Unit", and enter the interface as follows:
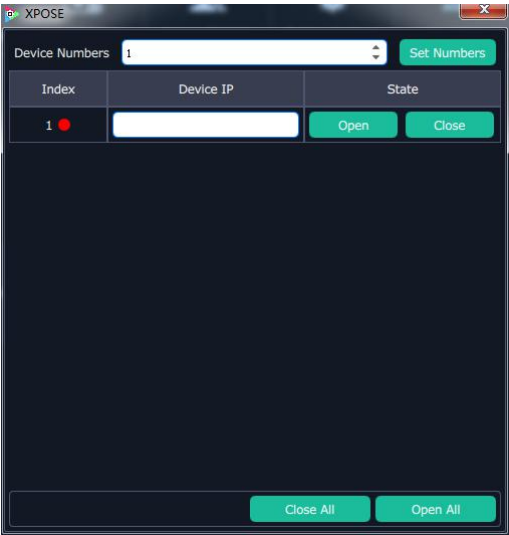
If need more X3 devices to be backup, connect all X3 devices into one router,
Users can type in the Device Numbers and Set Numbers, then it will pop up the following
window:
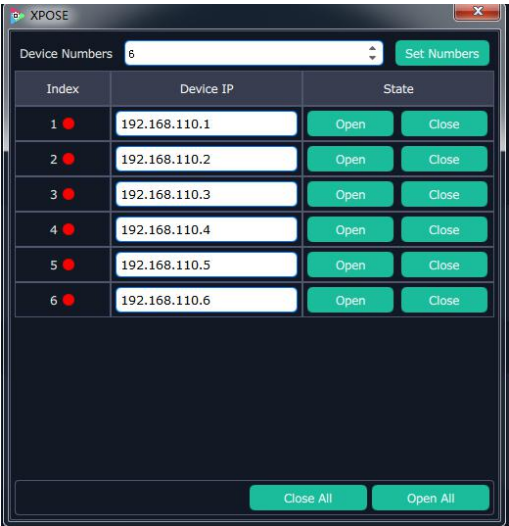
Users can close/open all communication port of all X3 devices by Close

All open all or close/open one by one. When one

device is connected, the red dot behind the index turn green.
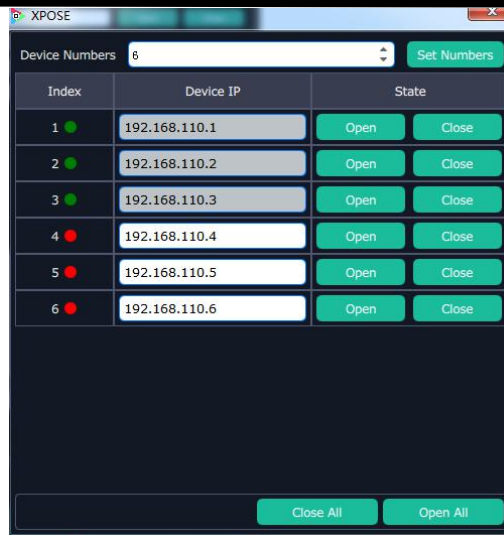
3.2.9 Logout

Click the "Logout", and enter the interface as follows:
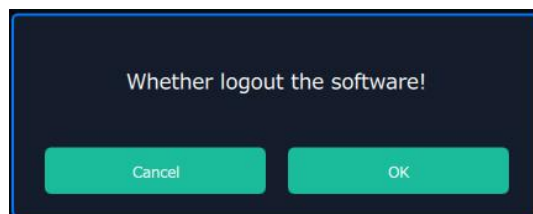
Click "OK" will logout the XPOSE.

Chapter 4 Ordering Codes

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

Chapter 5 Support

5.1 Contact Us

www.rgblink.com

NETHERLANDS
CHINA
INDIA
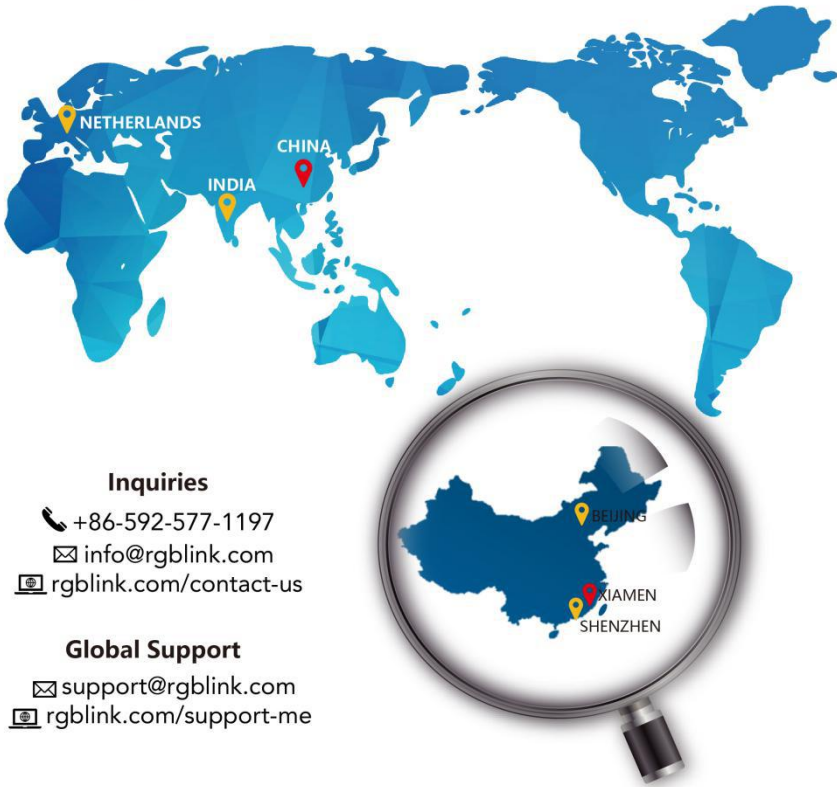
Inquiries
📞 +86-592-577-1197
✉ info@rgblink.com
💻 rgblink.com/contact-us
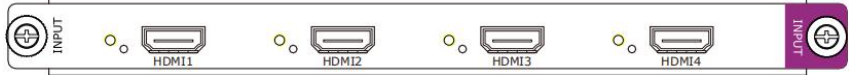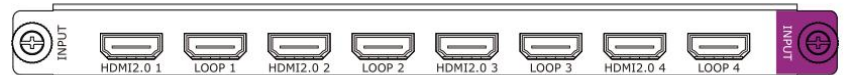
Global Support
✉ support@rgblink.com
💻 rgblink.com/support-me

BEIJING
XIAMEN
SHENZHEN

@RGBLINK   /rgblink   +rgblink   /rgblink   rgblink   rgblink
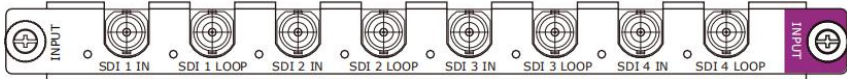
RGBlink **Headquarters** Xiamen, China	**China Regional** **Sales & Support** Shenzhen, China	**Beijing Region** **Office** Beijing, China	**Europe Regional** **Sales & Support** Eindhoven, Holland	**India Regional** **Sales & Support** Mumbai, India
6th Floor Weiye Building Torch Park Hi Tech Zone Huli	11th Floor Baiwang Building 5318 Shahe West Road Baimang, Nanshan	Building 8, 25 Qixiao Road Shahe Town Changping	Flight Forum Eindhoven 5657 DW	78/626, Motilal Nagar, No1, Rd No1, Goregaon West, Mumbai
✉ sales@rgblink.com			✉ eu@rgblink.com	✉ support@rgblink.com
📞 +86-592-577-1197	📞 +86-755-2153-5149	📞 +86- 4008-592-114	📞 +31(040)-202-71-83	📞 +91-98200-86718

Chapter 6 Appendix

6.1 Specification

DVI Input Module	
Interface Appearance	
Dimension	216*200*20(mm)
Number of Connectors	4
Connector	DVI-I
Input Resolution	SMPTE 480i | 576i | 720p@50/59.94/60 | 1080i@50/59.94/60| 1080p@50/59.94/60
	VESA 800×600@60 |1024×768@60 |1280×768@60 | 1280×1024@60 | 1600×1200@60 | 1920×1080@60
Format Standard	Single Link DVI
Color Space	8bit RGB
Indicator Light	White Light:normal signal connection;Unlit:no signal connection
HDMI Input Module （De-interlace and Sync）	
Interface Appearance	
Dimension	216*200*20(mm)
Number of Connectors	4
Connector	HDMI- A
Input Resolution	SMPTE 480i | 576i | 720p@50/59.94/60 | 1080i@50/59.94/60| 1080p@50/59.94/60
	VESA 800×600@60 | 1024×768@60 | 1280×768@60 | 1280×1024@60 | 1600×1200@60 | 1920×1080@60
Format Standard	HDMI 1.3
Color Space	8 bit RGB/YUV 4:2:2/YUV 4:4:4
Indicator Light	White Light:normal signal connection;Unlit:no signal connection
HDMI 2.0 HDR Input Module	
Interface Appearance	
Dimension	216*212*20(mm)
Number of	8（4 In | 4 Loop）

Connectors	
Connector	HDMI-A
Input Resolution	SMPTE 720P@60 | 1080P@60 |2160@60 VESA 800×600@60 | 1024×768@60 | 1280×720@60 | 1280×800@60 | 1366×768@60 | 1400×1050@60 | 1600×1200@60 | 1920×1080@60 | 2048×1152@60 | 2560×812@60 | 2560×816@60 | 2560×1600@60 | 3840×1080@60|3840×2160@23.98/24/25/29.97/30/50 /60 | 4096×2160@60 | 7680×1080@60
Format Standard	HDMI 2.0
Color Space	8 bit RGB/YUV 4:2:0/YUV 4:2:2/YUV 4:4:4 10 bit RGB/YUV 4:2:0/YUV 4:2:2/YUV 4:4:4 12 bit RGB/YUV 4:2:0/YUV 4:2:2/YUV 4:4:4
Indicator Light	White Light:normal signal connection;Unlit:no signal connection
3G-SDI Input /Loop Module	
Interface Appearance	
Dimension	216*220*20(mm)
Number of Connectors	8 (4 Input, 4 Loop)
Connector	BNC
Input 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 274M SMPTE 296M | SMPTE 272M | SMPTE 299M | SMPTE 259M-C | DVB-ASI
Color Space	10 bit YUV4:2:2
Indicator Light	White Light:normal signal connection;Unlit:no signal connection
12G-SDI Input Module	
Interface Appearance	
Dimension	216*220*20(mm)
Number of Connectors	4 （3G SDI×4 or 12G SDI×1）
Connector	BNC
Input 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 274M SMPTE 296M | SMPTE 272M | SMPTE 299M | SMPTE ST 259, DVB-ASI,MADI
Color Space	10bit YUV 4:2:2
Indicator Light	White Light:normal signal connection;Unlit:no signal connection
HDBaseT Input Module	
Interface Appearance	
Dimension	216*220*20(mm)
Number of Connectors	4
Connector	RJ45
Input Resolution	SMPTE 720p@50/59.94/60 | 1080p@23.98/24/25/29.97/30/50/59.94/60 VESA 800×600@60/75/85 | 1024×768@60/75/85 | 1280×768@60 | 1280×800@60|1280×1024@60/75/85| 1360×768@60 | 1366×768@60 |1400×900@60 | 1600×1050@60 | 1600×1200@60 |1680×1050@60 | 1920×1080@60 | 1920×1200@60 | 2048×1152@60 | 2560×812@60 | 2560×816@60 |
Standard	HDBaseT 1.0
Color Space	8 bit RGB/YUV 4:2:2/YUV 4:4:4 10 bit RGB/YUV 4:2:2/YUV 4:4:4 12 bit RGB/YUV 4:4:4
Indicator Light	White Light:normal signal connection;Unlit:no signal connection
H.264 Input Module	
Interface Appearance	
Dimension	216*220*20(mm)
Number of Connectors	4
Connector	RJ45
Input Resolution	176×144@60 | 240×180@60 | 320×180@60 | 320×240@60 | 320×256@60 | 352×228@60 | 352×480@60 | 400×224@60 | 400×720@60 | 480×270@60 | 480×272@60 | 480×720@60 | 480×760@60 | 480×784@60 | 480×480@60 | 544×480@60 | 608×448@60 | 640×760@60 | 640×480@60 | 704×576@60 | 720×404@60 | 720×480@60 | 720×540@60 | 720×576@60 | 850×480@60 |1024×576@60 | 1280×720@60 | 1680×1056@60 | 1920×1080@60
Standard	H.264/MPEG-4 AVC
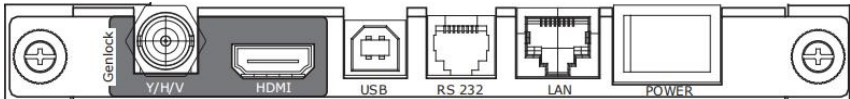
Indicator Light	White Light:normal signal connection;Unlit:no signal connection

4K@30 Input Module

Interface Appearance		
Dimension	216*212*20（mm）	
Number of Connectors	6	
Connector	DVI-I | HDMI-A | DisplayPort	
Input Resolution	SMPTE	480i | 576i | 720p@50/59.94/60 | 1080i@50/50.94/60 | 1080p@ 23.94/24/25/30/50/59.94/60 | 2160p@23.94/24/25/30
	VESA	800×600@60 | 1024×768@60 | 1280×768@60 | 1280×1024@60 | 1600×1200@60 |1920×1080@60 | 1920×1200@60 | 2048×1152@60 | 2560×1440@60 | 2560×1600@60 | 3840×2160@24/24/25/30
Standard	DVI	DUAL
	HDMI	1.4
	DisplayPort	1.1
Color Space	8 bit RGB/YUV 4:2:2/YUV 4:4:4	
Indicator Light	White Light:normal signal connection;Unlit:no signal connection	

4K@60 Input Module

Interface Appearance		
Dimension	216*212*20(mm)	
Number of Connectors	4	
Connector	DVI-I | HDMI-A |DisplayPort	
Input Resolution	SMPTE	720p@60 | 1080p@60 |2160p@24/25/30/50/60
	VESA	800×600@60 | 1024×768@60 | 1280×768@60 | 1280×800@60 |1280×1024@60 | 1360×768@60 | 1366×768@60 |1400×900@60 | 1600×1050@60 | 1600×1200@60 |1680×1050@60 | 1920×1080@23.98/24/25/29.97/30/50/59.94/60 | 1920×1200@60 |2048×1152@60 | 2560×812@60 | 2560×816@60 | 2560×1600@60 | 3840×1080@60| 3840×2160@23.98/24/25/29.97/30/50/60 | 4096×2160@60
Support Standards	DVI	DUAL
	HDMI	2.0 | 1.4
	DisplayPort	1.2
Color Space	8 bit RGB/YUV 4:2:0/YUV 4:2:2/YUV 4:4:4	

	10 bit RGB/YUV 4:2:0/YUV 4:2:2/YUV 4:4:4
	12 bit RGB/YUV 4:2:0/YUV 4:2:2/YUV 4:4:4
Indicator Light	White Light:normal signal connection;Unlit:no signal connection

DVI Output Module	
Interface Appearance	
Dimension	216*200*20(mm)
Number of Connectors	4
Connector	DVI-I
Signal Level	TMDS pw, 165MHz bandwidth
Output Resolution	SMPTE　　　720p@50/59.94/60| 1080p@50/59.94/60 VESA　　　800×600@60 |1024×768@60/75/85| 　　　　　1280×720@50/59.94/60 |1280×800@60| 　　　　　1280×960@60 | 1280×1024@60/75/85 | 　　　　　1400×1050@60 |1600×1200@60| 　　　　　1920×1080@23.98/24/25/29.97/30/50/59.94/60| 　　　　　2048×1152@60
Color Space	8 bit RGB
Indicator Light	White Light:normal signal connection;Unlit:no signal connection
SDI Output Module	
Interface Appearance	
Dimension	216*220*20(mm)
Number of Connectors	4
Connector	BNC
Signal level	800mV±10%
Supported Standard	SMPTE 425M (Level A and Level B), SMPTE 424M, SMPTE 292, SMPTE 259M-C and DVB-ASI
Output 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
Color Space	10 bit YUV 4:2:2
Indicator Light	White Light:normal signal connection;Unlit:no signal connection
2K HDMI Output Module	
Interface Appearance	
Dimension	216*220*20(mm)

Number of Connectors	4	
Connector	HDMI-A	
Output 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	
Color Space	8 bit RGB 10 bit RGB 12 bit RGB	
Indicator Light	White Light:normal signal connection;Unlit:no signal connection	

HDMI 2.0 Output Module

Interface Appearance		
Dimension	216*212*20(mm)	
Number of Connectors	2	
Connector	HDMI-A	
Output Resolution	SMPTE	720p@60 | 1080p@60 | 2160p@60
	VESA	1280×720@60 | 1360×768@60 | 1366×768@60 | 1600×900@60 |1920×1080@60|2540×1440@60| 3480×2048@60 | 3840×2160@60 | 4096×2160@60
Color Space	8 bit RGB 10 bit RGB 12 bit RGB	
Indicator Light	White Light:normal signal connection;Unlit:no signal connection	

HDBaseT Output Module

Interface Appearance		
Dimension	216*212*20(mm)	
Number of Connectors	4	
Connector	RJ45	
Output 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	
Color Space	8bit RGB	
Indicator Light	White Light:normal signal connection;Unlit:no signal connection	

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	3
Connector	USB-B | RJ11 | RJ45
Function	
Switch	Support any two inputs fade in fade out
Extras	
Power Supply	100-240V IEC-3
Working Temperature	0°C~45°C
Stored Humidity	10%~90%
Product Warranty	3 years parts and labor warranty

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:

Captive Screw
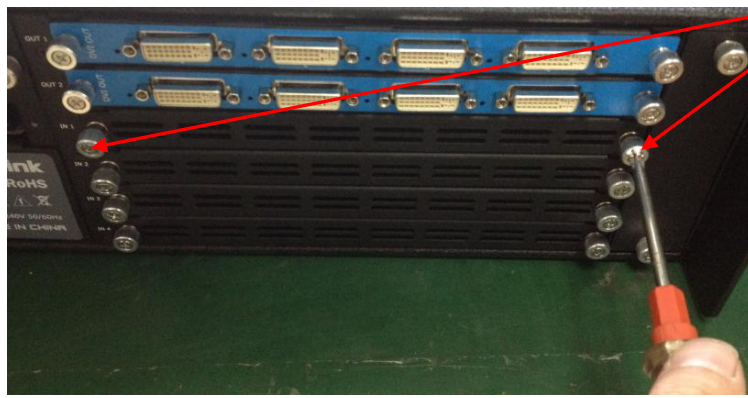
2. Install the input module:

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.

Micro SD card
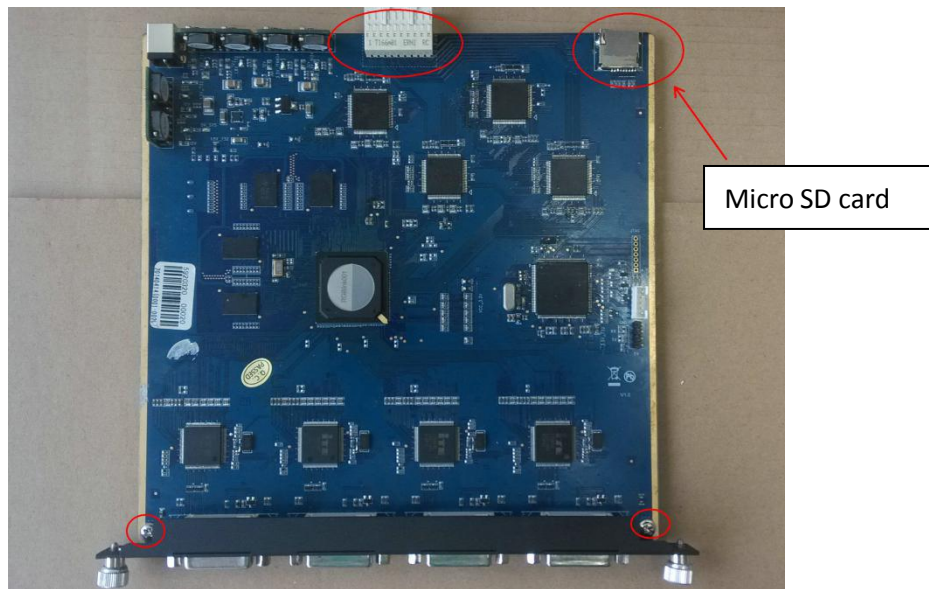
DVI input module:

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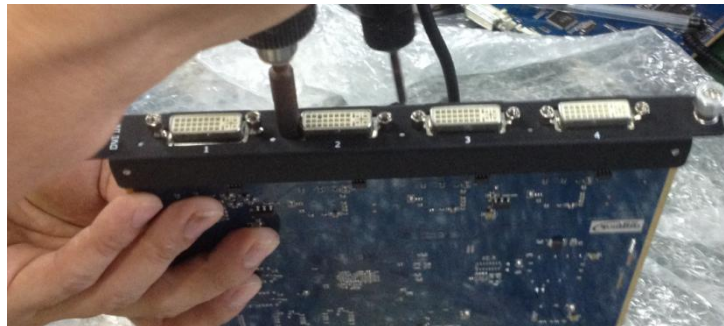
4. Push the input modules into the device along the slide rail, and screw the captive screws, as shown in figure:

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

6.3 Terms & Definitions

●**RCA:** Connector used primarily in consumer AV equipment for both audio and video. The RCA connector was developed by the Radio Corporation of America.

●**BNC:** Stands for Bayonet Neill-Concelman. A cable connector used extensively in television (named for its inventors). A cylindrical bayonet connector that operates with a twist-locking motion .

●**CVBS:** CVBS or Composite video, is an analog video signal without audio. Most commonly CVBS is used for transmission of standard definition signals. In consumer applications the connector is typically RCA type, while in professional applications the connector is BNC type.

●**YPbPr:** Used to describe the colour space for progressive-scan. Otherwise known as component video.

●**VGA:** Video Graphics Array. VGA is an analog signal typically used on earlier computers. The signal is non-interlaced in modes 1, 2, and 3 and interlaced when using in mode.

●**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.

●**SDI:** Serial Digital Interface. Standard definition video is carried on this 270 Mbps data transfer rate. Video pixels are characterized with a 10-bit depth and 4:2:2 color quantization. Ancillary data is included on this interface and typically includes audio or other metadata. Up to sixteen audio channels can be transmitted. Audio is organised into blocks of 4 stereo pairs. Connector is BNC.

●**HD-SDI:** High-definition serial digital interface (HD-SDI), is standardized in SMPTE 292M this provides

a nominal data rate of 1.485 Gbit/s.

●**3G-SDI:** Standardized in SMPTE 424M, consists of a single 2.970 Gbit/s serial link that allows replacing dual link HD-SDI.

●**6G-SDI:** Standardized in SMPTE ST-2081 released in 2015, 6Gbit/s bitrate and able to support 2160p@30.

●**12G-SDI:** Standardized in SMPTE ST-2082 released in 2015, 12Gbit/s bitrate and able to support 2160p@60.

●**U-SDI:** Technology for transmitting large-volume 8K signals over a single cable. a signal interface called the ultra high definition signal/data interface (U-SDI) for transmitting 4K and 8K signals using a single optical cable. The interface was standardized as the SMPTE ST 2036-4.

●**HDMI:** High Definition Multimedia Interface: An interface used for the transmission of uncompressed high definition video, up to 8 channels of audio, and control signals, over a single cable.
●**HDMI 1.3:** Released on June 22 2006, and increased the maximum TMDS clock to 340 MHz (10.2 Gbit/s). Support resolution 1920 × 1080 at 120 Hz or 2560 × 1440 at 60 Hz). It added support for 10 bpc, 12 bpc, and 16 bpc color depth (30, 36, and 48 bit/px), called deep color.

●**HDMI 1.4:** Released on June 5, 2009, added support for 4096 × 2160 at 24 Hz, 3840 × 2160 at 24, 25, and 30 Hz, and 1920 × 1080 at 120 Hz. Compared to HDMI 1.3, 3 more features added which are HDMI Ethernet Channel (HEC) , audio return channel (ARC),3D Over HDMI, a new Micro HDMI Connector, an expanded set of color spaces.

●**HDMI 2.0:** Released on September 4, 2013 increases the maximum bandwidth to 18.0 Gbit/s. Other features of HDMI 2.0 include up to 32 audio channels, up to 1536 kHz audio sample frequency, the HE-AAC and DRA audio standards, improved 3D capability, and additional CEC functions.

●**HDMI 2.0a:** Was released on April 8, 2015, and added support for High Dynamic Range (HDR) video with static metadata.

●**HDMI 2.0b:** Was released March, 2016, support for HDR Video transport and extends the static metadata signaling to include Hybrid Log-Gamma (HLG).

●**HDMI 2.1:** Released on November 28, 2017. It adds support for higher resolutions and higher refresh rates, Dynamic HDR including 4K 120 Hz and 8K 120 Hz.

●**DisplayPort:** A VESA standard interface primarily for video, but also for audio, USB and other data. DisplayPort (orDP) is backwards compatible with HDMI, DVI and VGA.

●**DP 1.1:** Was ratified on 2 April 2007, and version 1.1a was ratified on 11 January 2008. DisplayPort 1.1 allow a maximum bandwidth of 10.8 Gbit/s (8.64 Gbit/s data rate) over a standard 4-lane main link, enough to support 1920x1080@60Hz

●**DP 1.2:** Introduced on 7 January 2010, effective bandwidth to 17.28 Gbit/s support increased resolutions, higher refresh rates, and greater color depth, maximum resolution 3840 × 2160@60Hz

●**DP 1.4:** Publish on 1 Mar, 2016.overall transmission bandwidth 32.4 Gbit/s ,DisplayPort 1.4 adds support for Display Stream Compression 1.2 (DSC), DSC is a "visually lossless" encoding technique with up to a 3:1 compression ratio. Using DSC with HBR3 transmission rates, DisplayPort 1.4 can support 8K UHD (7680 × 4320) at 60 Hz or 4K UHD (3840 × 2160) at 120 Hz with 30 bit/px RGB color and HDR. 4K at 60 Hz 30 bit/px RGB/HDR can be achieved without the need for DSC.

●**Multi-mode Fiber:** Fibers that support many propagation paths or transverse modes are called multi-mode fibers, generally have a wider core diameter and are used for short-distance communication links and for applications where high power must be transmitted.

●**Single-mode Fiber:** Fiber that support a single mode are called single-mode fibers. Single-mode fibers are used for most communication links longer than 1,000 meters (3,300 ft).

●**SFP:** Small form-factor pluggable , is a compact, hot-pluggable network interface module used for both telecommunication and data communications applications.

●**Optical Fiber Connector:** Terminates the end of an optical fiber, and enables quicker connection and disconnection than splicing. The connectors mechanically couple and align the cores of fibers so light can pass. 4 most common types of optical fiber connectors are SC, FC, LC,ST.

●**SC:** (Subscriber Connector), also known as the square connector was also created by the Japanese company – Nippon Telegraph and Telephone. SC is a push-pull coupling type of connector and has a 2.5mm diameter. Nowadays, it is used mostly in single mode fiber optic patch cords, analog, GBIC, and CATV. SC is one of the most popular options, as its simplicity in design comes along with great durability and affordable prices.

●**LC：**(Lucent Connector) is a small factor connector (uses only a 1.25mm ferrule diameter) that has a snap coupling mechanism. Because of its small dimensions, it is the perfect fit for high-density connections, XFP, SFP, and SFP+ transceivers.

●**FC:** (Ferrule Connector) is a screw type connector with a 2.5mm ferrule. FC is a round shaped threaded fiber optic connector,mostly used on Datacom, telecom, measurement equipment, single-mode laser.

●**ST:** (Straight Tip) was invented by AT&T and uses a bayonet mount along with a long spring-loaded ferrule to support the fiber.

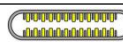●**USB:** Universal Serial Bus is a standard that was developed in the mid-1990s that defines cables, connectors and communication protocols. This technology is designed to allow a connection, communication and power supply for peripheral devices and computers.

●**USB 1.1:** Full–Bandwidth USB, specification was the first release to be widely adopted by the consumer market. This specification allowed for a maximum bandwidth of 12Mbps.

●**USB 2.0:** or Hi–Speed USB, specification made many improvements over USB 1.1. The main improvement was an increase in bandwidth to a maximum of 480Mbps.

● **USB 3.2:** Super Speed USB with 3 varieties of 3.2 Gen 1(original name USB 3.0), 3.2Gen 2(original name USB 3.1), 3.2 Gen 2x2 (original name USB 3.2) with speed up to 5Gbps,10Gbps,20Gbps respectively.

USB version and connectors figure:

	Type A	Type B	Mini A	Mini B	Micro- A	Micro -B	Type C
USB 2.0	▭	▭	▭	▭	▭	▭	
USB 3.0	▭	▭				▭	
USB 3.1&3.2							▭

●**NTSC:** The colour video standard used in North America and some other parts of the world created by the National Television Standards Committee in the 1950s. NTSC utilizes an interlaced video signals.

●**PAL:** Phase Alternate Line. A television standard in which the phase of the colour carrier is alternated from line to line. It takes four full images (8 fields) for the colour-to-horizontalimages (8 fields) for the colour-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, is widely used in needed on a PAL TV set. PAL, is widely used in Western Europe, Australia, Africa,   the   Middle East, and Micronesia. PAL uses 625-line, 50-field (25 fps) composite colour transmission system.

●**SMPTE:** Society of Motion image 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.

●**VESA:** Video Electronics Standards Association. An organization facilitating computer graphics through standards.

●**HDCP:** High-bandwidth Digital Content Protection (HDCP) was developed by Intel Corporation an is in wide use for protection of video during transmission between devices.

●**HDBaseT:** A video standard for the transmission of uncompressed video (HDMI signals) and related features using Cat 5e/Cat6 cabling infrastructure.

●ST2110: A SMPTE developed standard, ST2110 describes how to send digital video over and IP networks. Video is transmitted uncompressed with audio and other data in a separate streams. SMPTE2110 is intended principally for broadcast production and distribution facilities where quality and flexibility are more important.

●SDVoE: Software Defined Video over Ethernet (SDVoE) is a method for transmission, distribution and management AV signals using a TCP/IP Ethernet infrastructure for transport with low latency. SDVoE is commonly used in integration applications.

●Dante AV: The Dante protocol was developed for and widely adopted in audio systems for the transmission of uncompressed digital audio on IP based networks. The more recent Dante AV specification includes support for digital video.

●NDI: Network Device interface (NDI) is a software standard developed by NewTek to enable video-compatible products to communicate, deliver, and receive broadcast quality video in a high quality, low latency manner that is frame-accurate and suitable for switching in a live production environment over TCP (UDP) Ethernet based networks. NDI is commonly found in broadcast applications.

●RTMP: Real-Time Messaging Protocol (RTMP) was initially a proprietary protocol developed by Macromedia (now Adobe) for streaming audio, video and data over the Internet, between a Flash player and a server.

●RTSP: The Real Time Streaming Protocol (RTSP) is a network control protocol designed for use in entertainment and communications systems to control streaming media servers. The protocol is used for establishing and controlling media sessions between end points.

●MPEG: Moving Picture Experts Group is a working group formed from ISO and IEC developing standards that allow audio/video digital compression and Transmission.

●H.264: Also known as AVC (Advanced Video Coding) or MPEG-4i is a common video compression standard. H.264 was standardized by the ITU-T Video Coding Experts Group (VCEG) together with the ISO/IEC JTC1 Moving Picture Experts Group (MPEG).

●H.265: Also known as **HEVC** (High Efficiency Video Coding)H.265 is the successor to the widely used H.264/AVC digital video coding standard. Developed under the auspices of ITU, resolutions up to 8192x4320 may be compressed.

●API: An Application Programming Interface (API) provides a predefined function which allows access capabilities and features or routines via a software or hardware, without accessing source code or understanding the details of inner working mechanism. An API call may execute a function and/or provide data feedback/report.

●DMX512: The communication standard developed by USITT for entertainment and digital lighting systems.The wide adoption of the Digital Multiplex (DMX) protocol has seen the protocol used for a

wide range of other devices including video controllers. DMX512 is delivered over cable of 2 twisted pairs with 5pin XLR cables for connection.

●**ArtNet:** An ethernet protocol based on TCP/IP protocol stack, mainly used in entertainment/events applications. Built on the DMX512 data format, ArtNet enables multiple "universes" of DMX512 to be transmitted using ethernet networks for transport.

●**MIDI:** MIDI is the abbreviation of Musical Instrument Digital Interface. As the name indicates the protocol was developed for communication between electronical musical instruments and latterly computers. MIDI instructions are triggers or commands sent over twisted pair cables, typically using 5pin DIN connectors.

●**OSC:** The principle of Open Sound Control (OSC) protocol is for networking sound synthesizers, computers, and multimedia devices for musical performance or show control. As with XML and JSON, the OSC protocol allows sharing data. OSC is transported via UDP packets between devices connected on an Ethernet.

●**Brightness:** Usually refers to the amount or intensity of video light produced on a screen without regard to colour. Sometimes called black level.

●**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. Well-controlled viewing conditions should yield a practical contrast ratio of 30:1 to 50:1.

●**Colour Temperature:** The colour quality, expressed in degrees Kelvin (K), of a light source. The higher the colour temperature, the bluer the light. The lower the temperature, the redder the light. Benchmark colour temperature for the A/V industry include 5000°K, 6500°K, and 9000°K.

●**Saturation:** Chroma, Chroma gain. The intensity of the colour, or the extent to which a given colour in any image is free from white. The less white in a colour, the truer the colour or the greater its saturation. Saturation is the amount of pigment in a colour, and not the intensity.

●**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.

●**Frame:** In interlaced video, a frame is one complete image.A video frame is made up of two   fields, or two sets of interlaced lines. In a   film, a frame is one still image of a series that makes up a motion image.

●**Genlock:** Allows synchronisation of otherwise video devices. A signal generator provides a signal pulses which connected devices can reference. Also see Black Burst and Color Burst.

●**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.

●**Colour Burst:** In colour TV systems, a burst of subcarrier frequency located on the back part of the composite video signal. This serves as a colour synchronizing signal to establish a frequency and phase reference for the Chroma signal. Colour burst is 3.58 MHz for NTSC and 4.43 MHz for PAL.

●**Colour Bars:** A standard test pattern of several basic colours (white, yellow, cyan, green, magenta, red, blue, and black) as a reference for system alignment and testing. In NTSC video, the most commonly used colour bars are the SMPTE standard colour bars. In PAL video, the most commonly used colour bars are   eight full field bars. On   computer   monitors the most commonly used colour bars are two rows of reversed colour bars

●**Seamless Switching:** A feature found on many video switchers. This feature causes the switcher to wait until the vertical interval to switch. This avoids a glitch (temporary scrambling) which often is seen when switching between sources.

●**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.

●**PIP:** Picture-In-Picture. A small image within a larger image created by scaling down one of image to make it smaller. 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 .

●**HDR:** is a high dynamic range (HDR) technique used in imaging and photography to reproduce a greater dynamic range of luminosity than what is possible with standard digital imaging or photographic techniques. The aim is to present a similar range of luminance to that experienced through the human visual system.

●**UHD:** Standing for Ultra High Definition and comprising 4K and 8K television standards with a 16:9 ratio, UHD follows the 2K HDTV standard. A UHD 4K display has a physical resolution of 3840x2160 which is four times the area and twice both the width and height of a HDTV/FullHD (1920x1080) video signal.

●**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 provided EDID data, ensuring proper video image quality.

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#	1. Add the optional module. 2. Update the menu tree. 3. Update the windows control program.	Vira
V1.2	2015-07-17	0002#	1. Add the menu operation instruction. 2. Add "Optional Module Installation and Replacement Instruction".	Vira
V1.3	2015-07-29	0003#	1. Update the windows control program. 2. Update the common Questions and solutions. 3. Update the specification.	Vira
V1.4	2015-12-02	0004#	1. Update the back panel. 2. Update the windows control program. 3. Update the software upgrade. 4. Update the specification.	Vira
V1.5	2018-06-15	0005#	1. Update XPOSE control 2. Update Specification	Fanny
V1.6	2021-07-08	0006#	1. Update Appendix	Sylvia

All information herein is Xiamen RGBlink Science & Technology Co Ltd. excepting noted.

RGBlink is a registered trademark of Xiamen RGBlink Science & Technology Co Ltd.

While all efforts are made for accuracy at time of printing, we reserve the right to alter otherwise make change without notice.