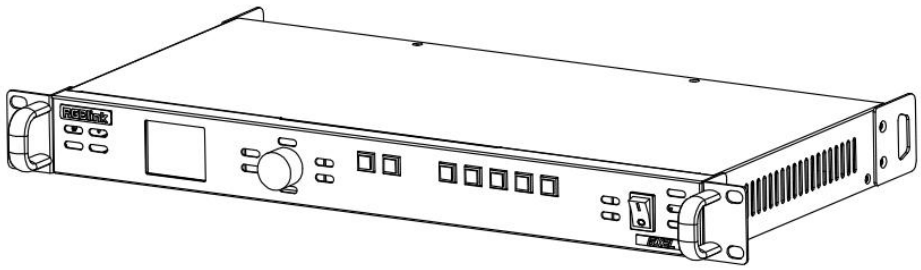
GX2L GX4L



User Manual

RGBlink®

Article NO: RGB-RD-UM-GX2L/GX4L-E001
Version NO: V1.1

Content

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 product 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 product 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 product 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

Power Cord

HDMI-DVI Cable

USB Cable

Certificate

Antistatic Bag

Note: Power Adapter supplied as British and Australian standards.

1.2 Product Overview

GX2L and GX4L are not only a video processor but a LED controller.GX2L supports two network port,with a maximum load capacity of 1.3 1million pixels;GX4L supports four network output, with a maximum load capacity of 2.31 million pixels.Both support resolution up to 2048×1152@60 or custom resolution.

GX2L and GX4L support layers cropping,scaling,and adjustment of light and color,so as to meet the on-site apply needs.Besides,both devices support embedded audio and realize the synchronization of audio and video.

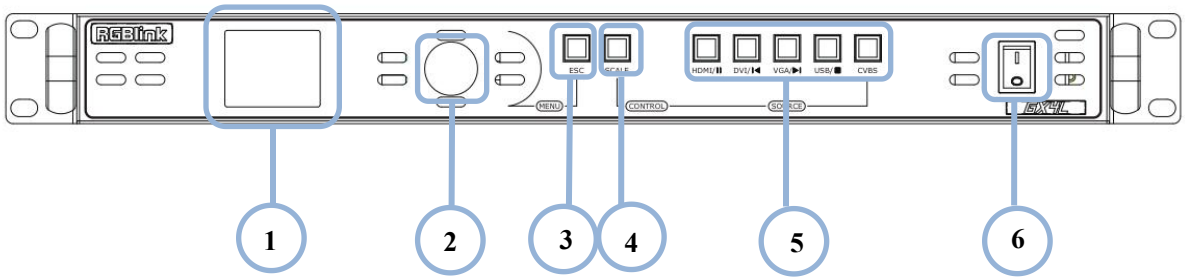
GX2L

GX4L

Key Features

- Support layer movement, scale and capture
- USB one-click plug and play
- Support independent external audio
- Auto-zoom via one click
- Support custom output resolutions
- EDID
- Single LAN port supports width up to 3840,height up to 1920
- Dual ethernet cable backup
- Brightness calibration point by point
- Support one-click play,control software free

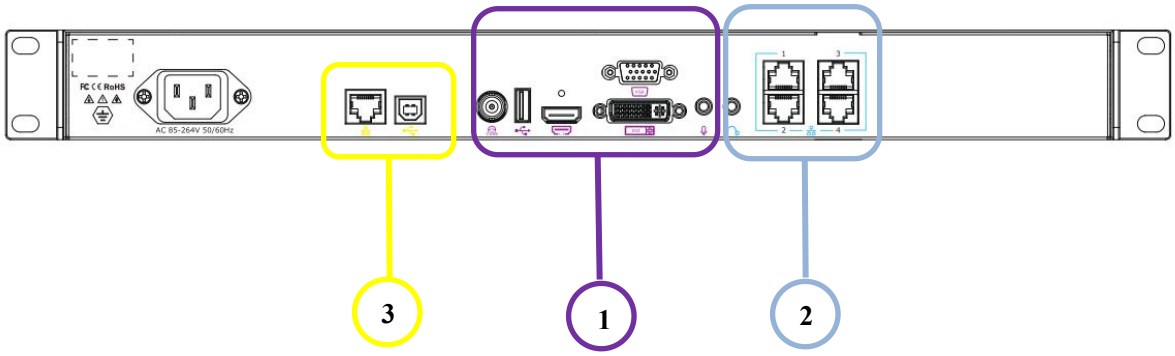
1.2.1 Front Panel



NO.	Item	Description
1	LCD	Show operation and menu items
2	Knob	（1）In home screen,press the knob to enter menu; （2）In main menu,rotate the knob to select sub-menu and press to enter the sub-menu; （3）In sub-menu,rotate the knob to adjust parameters and press to confirm.
3	ESC	Back to last menu
4	SCALE	Full screen scale
5	Input source	（1）HDMI: HDMI input source; （2）DVI: DVI input source; （3）VGA: VGA input source; （4）USB: USB input source; （5）CVBS: CVBS input source.
6	Power switch	Press to turn on the device

1.2.2 Rear Panel

Take GX4L as an example

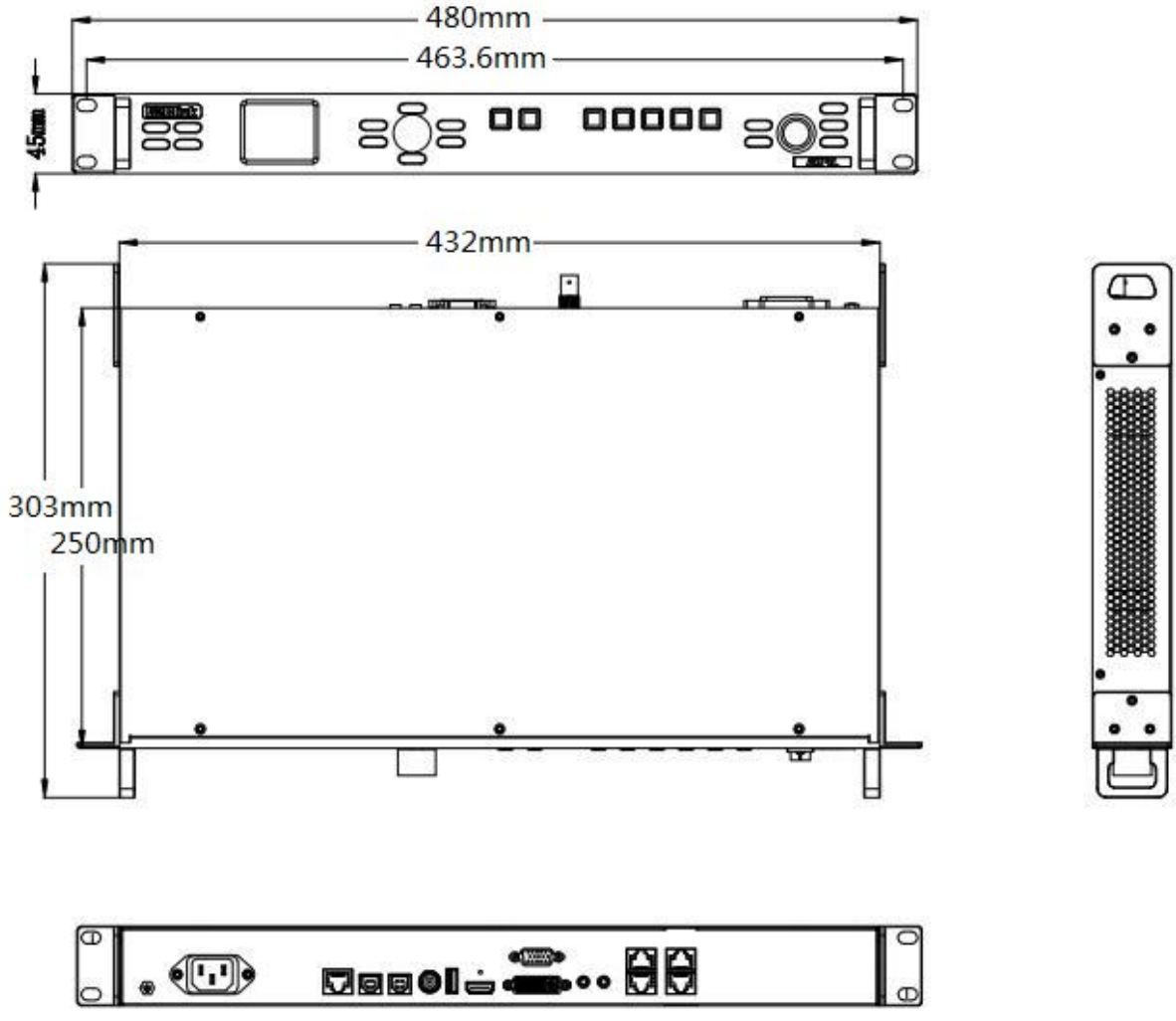


1. **Input Connectors**		
Connector	Number	Description
DVI-D(24+1)	1	Support VESA standard input resolutions such as 1920×1080@60hz Support preset resolutions and custom resolutions Support HDCP 1.4 and embedded EDID 1.4
HDMI 1.3	1	HDMI 1.3, Support VESA standard input resolutions such as 1920×1080@60hz,support preset resolutions and custom resolutions Support HDCP 1.4 and embedded EDID 1.4
VGA	1	Support resolutions up to 1920×1080@60hz and downward compatibility
CVBS	1	PAL/NTSC standard
USB（Type A）	1	USB play:1×USB2.0 — Image Format:jpg,jpeg,png,bmp; — Video Format:mp4,avi,mpg,mov,rmvb
AUDIO	1	Audio input and output
2.Output Connectors		
Connector	Number	Description
RJ45	4	■ Load capacity up to 2.31m pixels ■ H MAX pixels:3840 pixels ■ V MAX pixels:1920 pixels
3.Communication Connectors		
Connector	Number	Description
LAN(RS232)	1	Connect control device
USB(Type B)	1	Set parameters,processors,senders,receivers and its parameters,as well as upgrade

1.2.4 Dimension

Following is the dimension of GX4L for your reference:

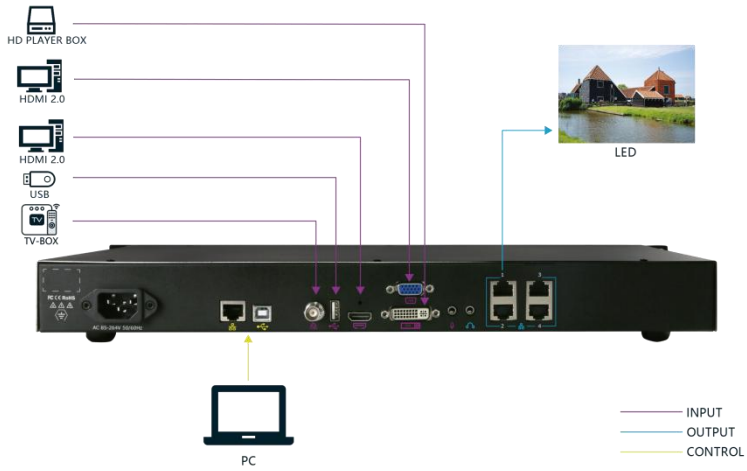
Dimension of GX2L/GX4L:480mm×303mm×45mm



Chapter 2 Install Your Product

Note: Since GX2L and GX4L only have the difference in the number of output network ports, other functions and operations are the same.Therefore, GX4L is taken as an example to introduce in the following chapters.

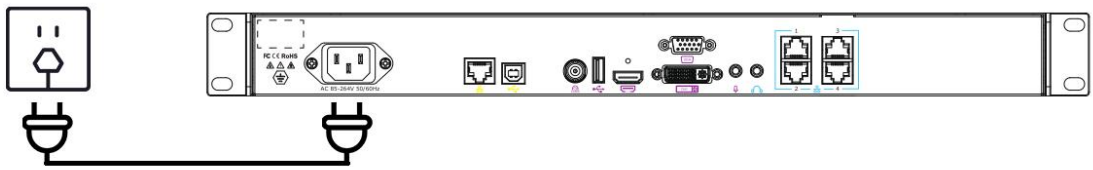
2.1 Connect the Sources



Connect signals to the product (ensure all devices are powered off first).

Tighten connector screws/locks where provided.

2.2 Connect the Power



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

2.3 Turn on Your Product

Press the power button.

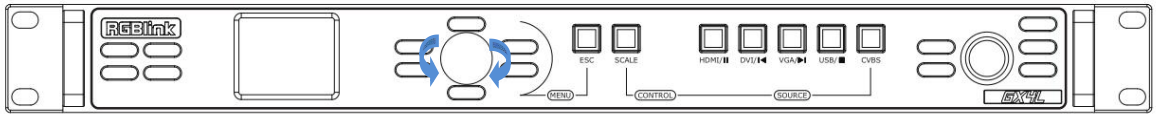
TFT screen shows as below,meanwhile the device enter initializing state after that,the device will load the previously saved setting. On delivery,the default input is HDMI.

Chapter 3 Use Your Product

3.1 Use the Menu Buttons

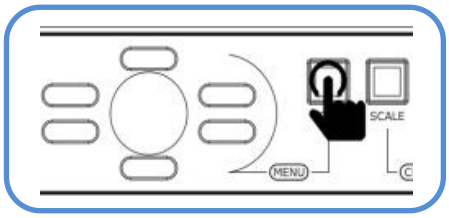
1.Knob

Push the knob to enter the main menu.
Rotate the knob to select the sub-menu,press the knob to confirm.
The operation steps is as follow:



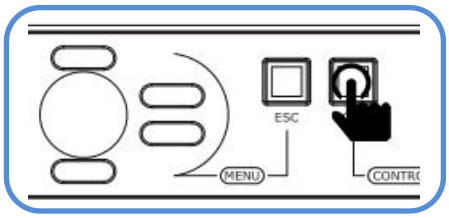
2.【ESC】button

Push【ESC】to exit the current menu or back to the main menu.



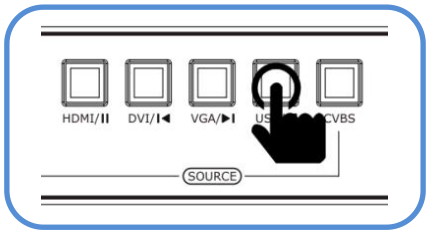
3.【SCALE】button

Push【**SCALE**】to enter <SCALE>menu.



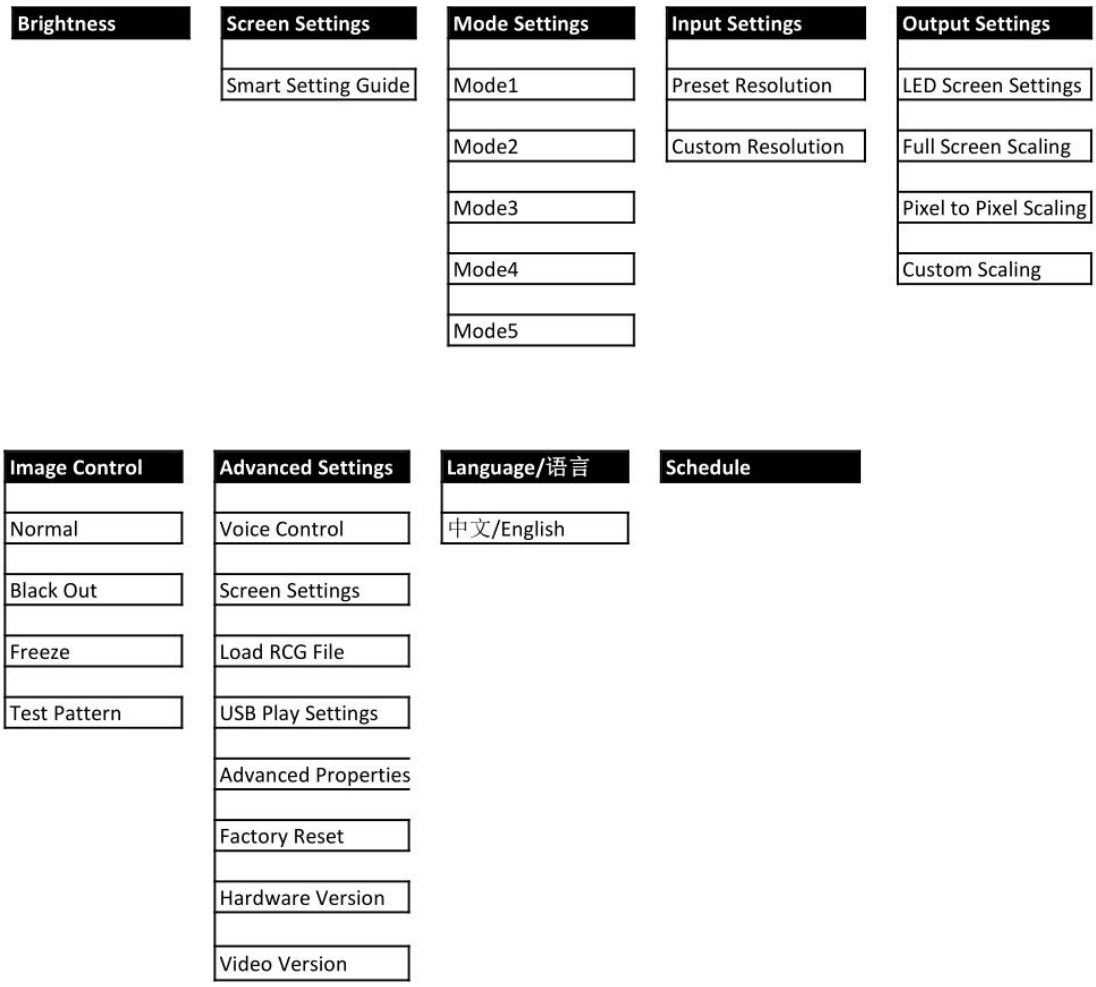
4. Switch Input Source

Push the input source button to switch the related input sources.



3.2 Menu Structure

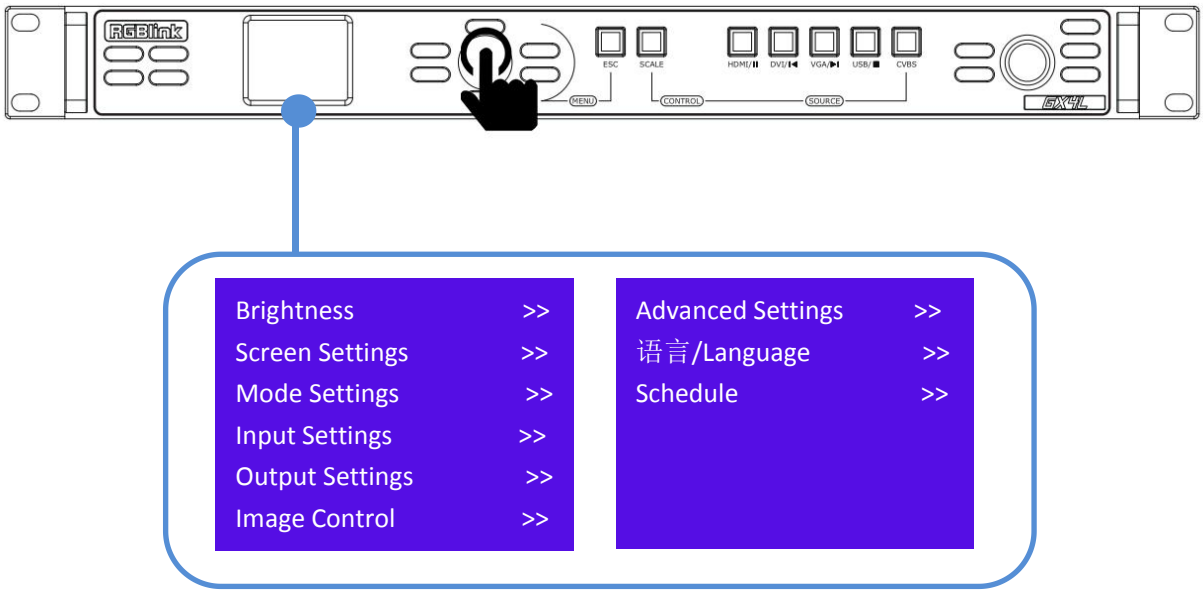
The MENU structure is shown in the figure below:



3.3 Use the Menu

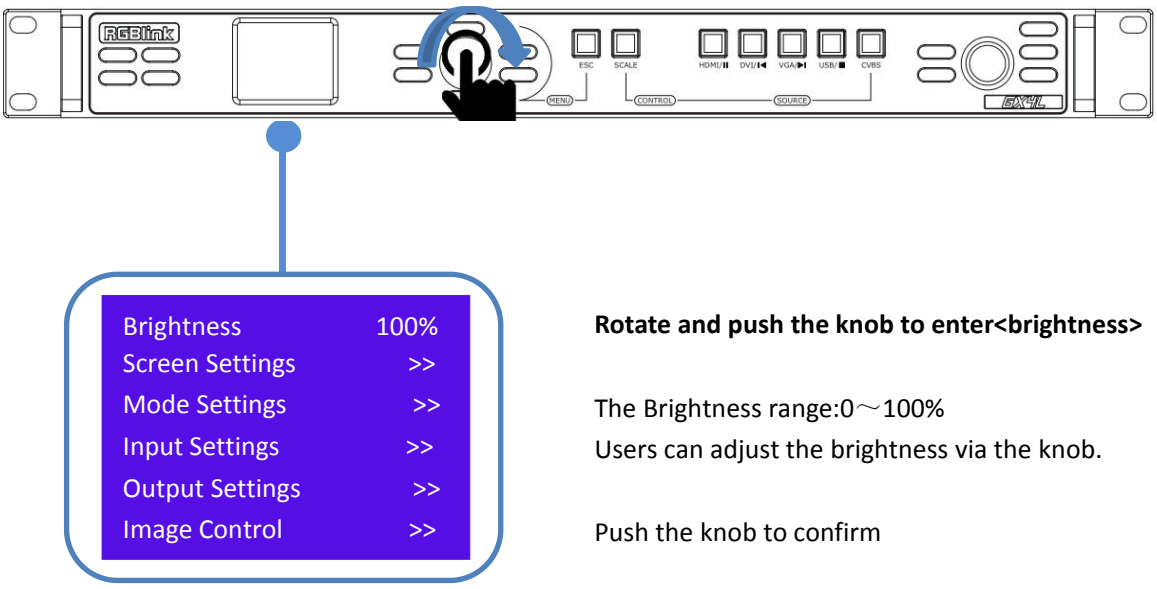
Use the menu system for convenient and intuitive operation.

GX4L TFT display shows the menu items. The TFT display will show the default state when the menu is not in use, or the operation has timed out. Rotate the knob in the front panel, the TFT display will show the corresponding menus according to user selections.



Push the knob to enter the main menu,as shown above.

3.3.1 Brightness

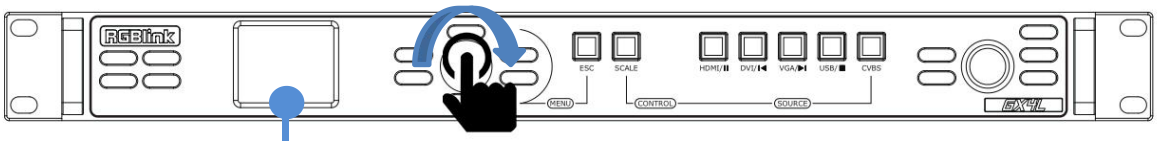


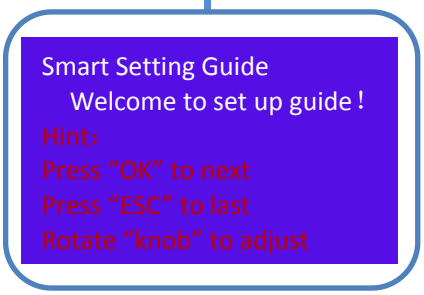
Rotate and push the knob to enter<brightness>

The Brightness range:0～100%
Users can adjust the brightness via the knob.

Push the knob to confirm

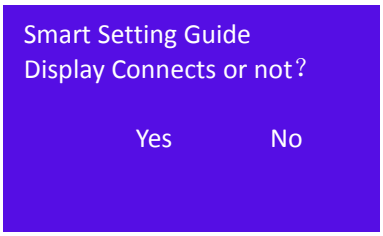
3.3.2 Screen Settings



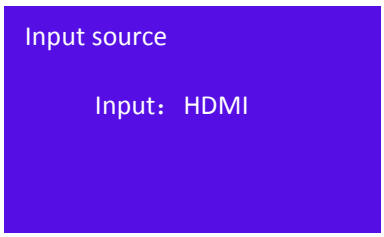


Rotate and push the knob to enter<Screen Settings>

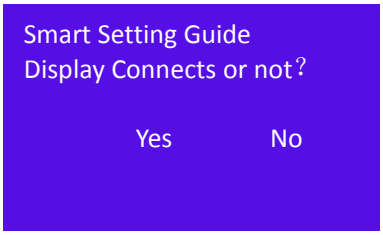
The <Screen Settings>is to quickly set the input source, output resolution, screen parameters and output mode.



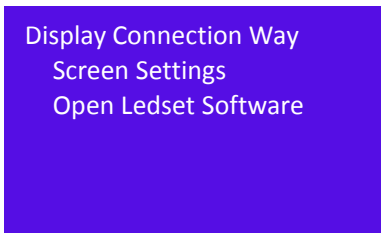
1. (1)If the display is connected,then select "Yes"and press the knob to next.



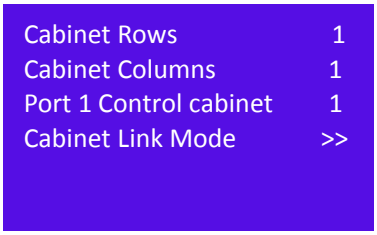
(2) Input source:HDMI/DVI/VGA/CVBS



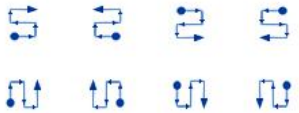
2. (1) If the display is connected,then select "NO"and press the knob to next.



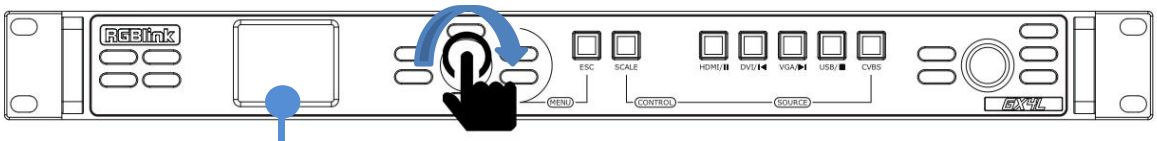
(2) If displays have not been connected, select"No" and enter <Display Connection Way> menu.
Select<Screen Settings>to next
Select<Open Ledset Software>to set parameters in XPOSE.

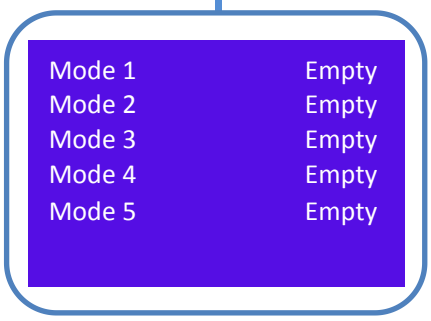


(3) In <Screen Settings>,users can set cabinet rows/ columns and cabinet link mode.



3.3.3 Mode Settings





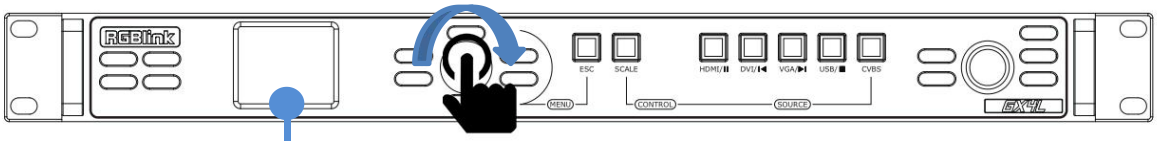
Rotate and press the knob to enter <Mode Settings>menu

After <Screen Settings>, the parameters of the current setting can be saved to the template mode,which can be loaded directly later. The parameters can be saved as follows:

(1) **Source:** storing the current input source type;
(2) **Screen:**save the current screen size ,position and other screen information;

GX4L supports up to **5** template mode.
Select"Load"to load saved mode.

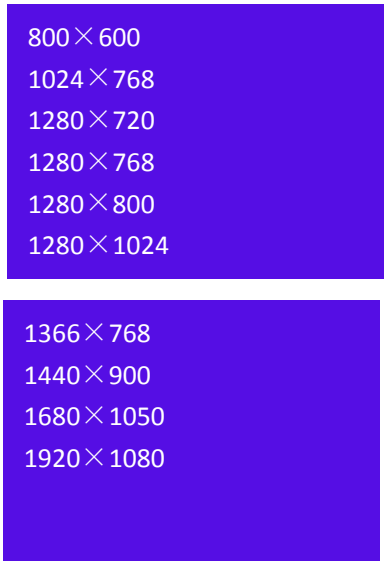
3.3.4 Input Settings



GX4L support preset resolution and custom resolution

1. **Rotate and press the knob to enter** <Input Settings>menu

1. Preset Resolution



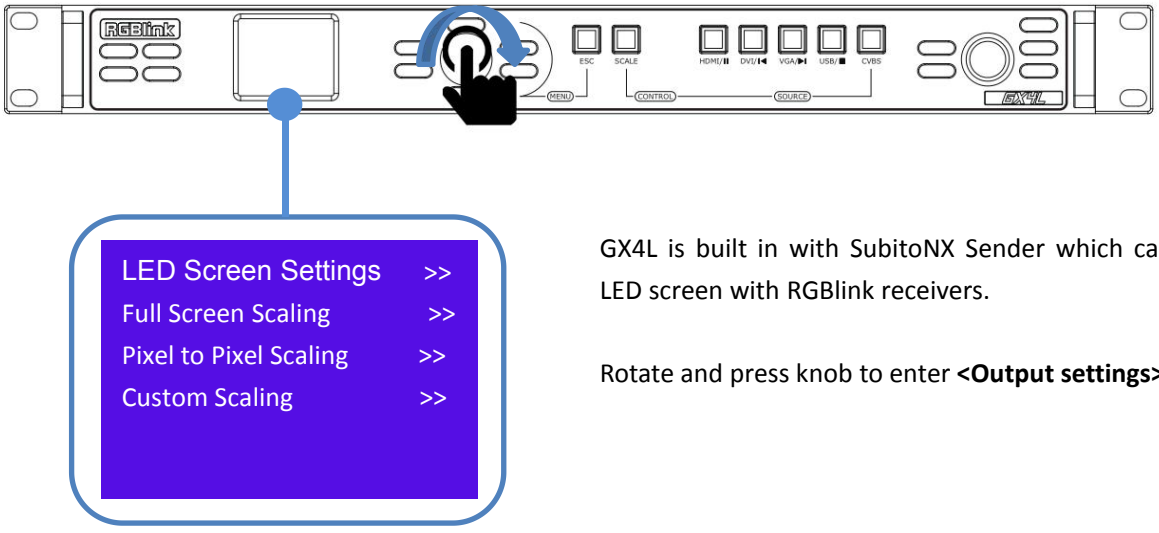
2. Users can select the following resolutions:

800×600,1024×768,1280×720,
1280×768,1280×800,1280×1024,
1366×768,1440×900,1680×1050,
1920×1080

2. Custom Resolution

3. If users want to customize the input resolution:
(1) **Rotate** the knob to **customize** the width and height of the input signal;
(2) **Press** down the knob to **confirm** the value;
(3) Select"Apply".

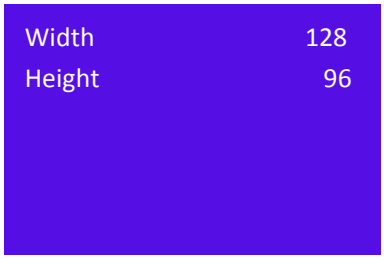
3.3.5 Output Settings



GX4L is built in with SubitoNX Sender which can control LED screen with RGBlink receivers.

Rotate and press knob to enter **<Output settings>**

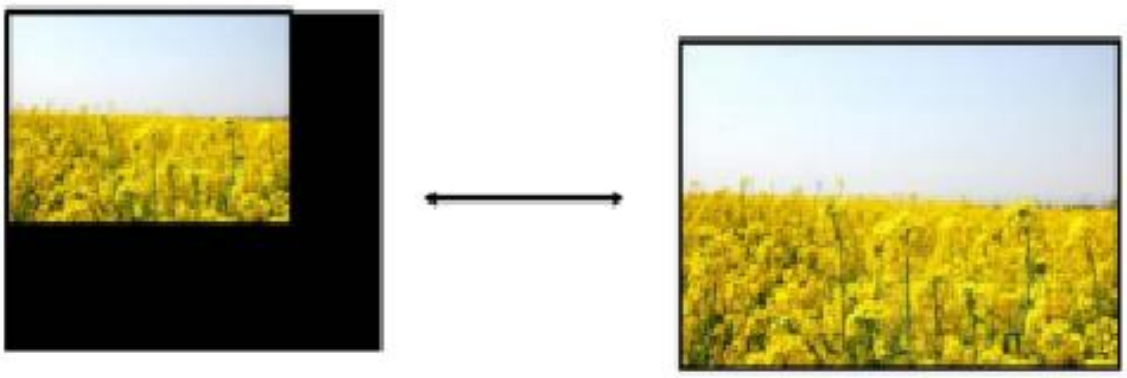
1. LED Screen Settings



Screen parameters are set according to the size of the LED screen. It is suitable for single screen mode.

For example,the size of the LED screen is 128×96 and choose the resolution that is closest to or greater than 128×96 to ensure that all images are displayed on the LED screen.

2. Full Screen Scaling



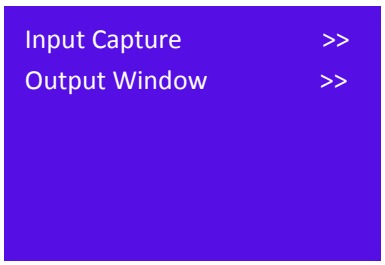
GX4L supports Full Screen Scaling,Pixel to Pixel Scaling and Custom Scaling

3. Pixel to Pixel Scaling

The pixel to pixel scaling is to adjust the corresponding position of the image horizontally offset X or vertically offset Y in LED screen controlled by receiving card.

You can adjust the value via knob.

4.Custom Scaling



GX4L also support custom scaling.

（1）Input Capture

Input Video Source	DVI
Hori_Width	128
Vert_Height	96
Hori_Start	0
Vert_Start	0

Select DVI as the input video source,and it will display the horizontal width and vertical height of the LED screen;

Assume that the screen is 128 × 96, and the horizontal and vertical start can be set to 0
The max horizontal start is 128
The max vertical start is 96

（2）Output Window

Window_Hori_Width	128
Window_Vert_Height	96
Window_Hori_Start	0
Window_Vert_Start	0

It shows the horizontal width and height of output window.
Assume that the screen is 128 × 96, and the horizontal and vertical start can be set to 0
The max horizontal start is 128
The max vertical start is 96

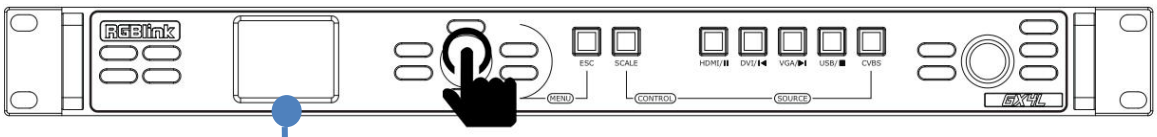
3.3.6 Image Control

Normal
Black Out
Freeze
Test Pattern

Image control is to set the image in LED screen.

Normal : display the output image normally
Black Out : black out the output image
Freeze : freeze the output image
Test Pattern : R/G/B/W

3.3.7 Advanced Settings



Voice Control	>>
Screen Settings	>>
Load RCG File	>>
USB Play Settings	>>
Advanced Properties	>>
Factory Reset	>>

Hardware Version	V1.6.6
Video Version	V6.6

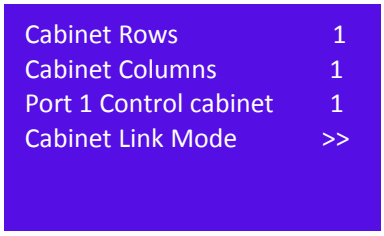
Rotate and press the knob to enter<Advanced Settings>Menu.

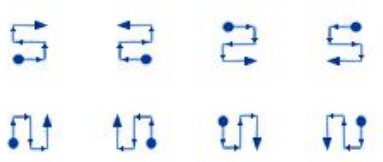
1. Voice Control

Audio:Enable/Disable

Volume Range: 0～100

2. Screen Settings





The Requirements of screen settings:

(1) The display screen is a regular display screen, rather than a special-shaped screen;

(2) The display box is regular, and each is the same size of the same resolution;

(3) There are several connection ways among cabinets.Each network port can be connected downward in the same direction, and can not be wired at will.

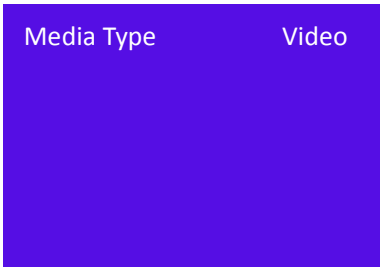
(4) When setting cabinet link mode,it is necessary to ensure that port 1 is the starting position.

The operation steps are the same as the 3.3.2

3. Load RCG File

Load the RCG files,which are set and saved in XPOSE in advance.

4. USB Play Settings



Media Type:video/picture

U Disk Capacity:unlimited

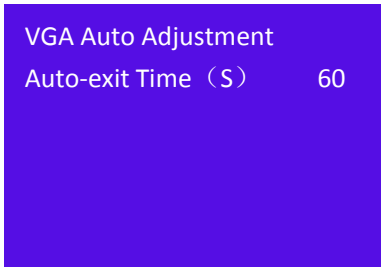
Supported Format:FAt32

Operation Steps:

Press the USB button in the front panel, and it will jump to the <USB Play Settings> interface.

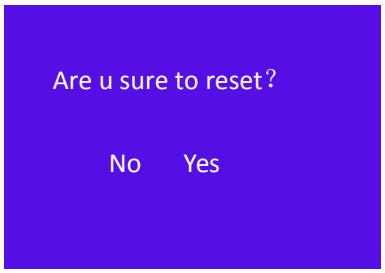
It will play the video files in order.

5. Advanced Properties



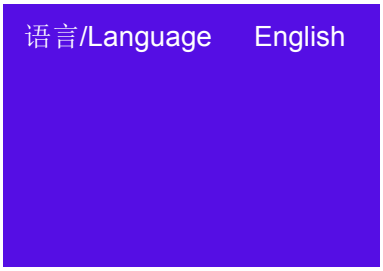
If the image on the screen occurs wrong,you can choose VGA Auto Adjustment.
Auto-exit Time:0-60S

6. Factory Reset



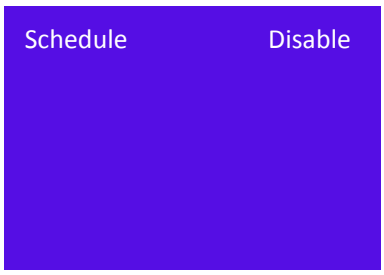
You can select YES to reset previous settings.

3.3.8 语言/Language



Users can select Chinese or English.

3.3.9 Schedule



Schedule:Disable/Able

Chapter 4 Software

4.1 Software Installation

Environment Requirements:

Window

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

Memory: 4 GB or more

Graphics: Support Direct X9 128M or above (open AERO effect)

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

Monitor：Resolution must be 1920×1080 pixel or above(it can not display normally if the resolution is lower than 1920×1080)

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

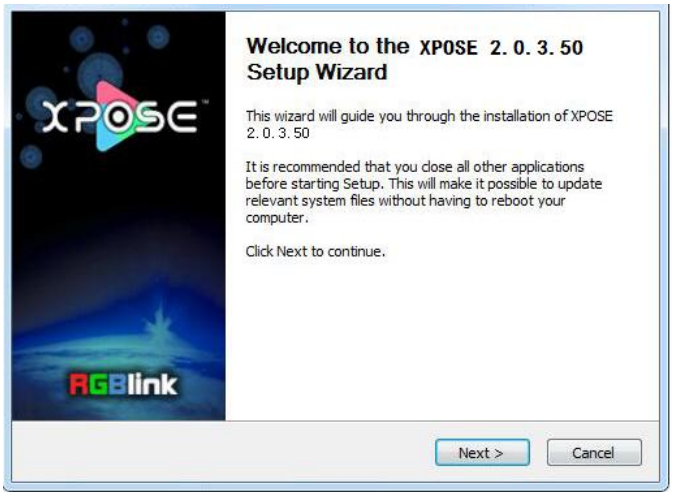
CPU:i5 and above

Mac

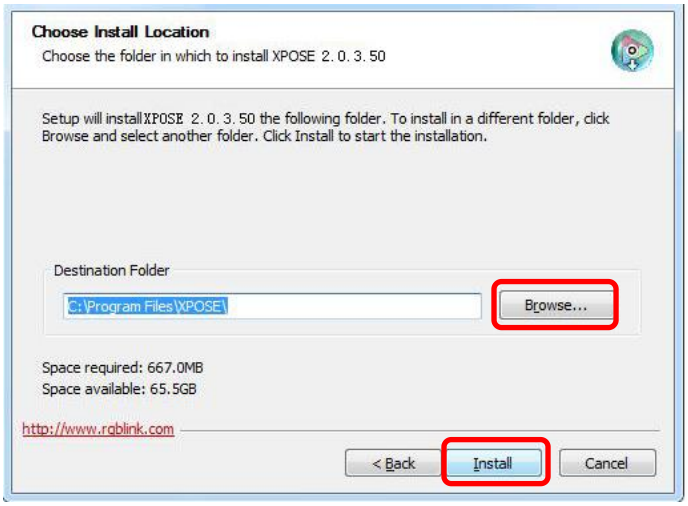
Monitor:Resolution must be 1680×1050 pixel or above(it can not display normally if the resolution is lower than 1680×1050)

CPU:i5 and above

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

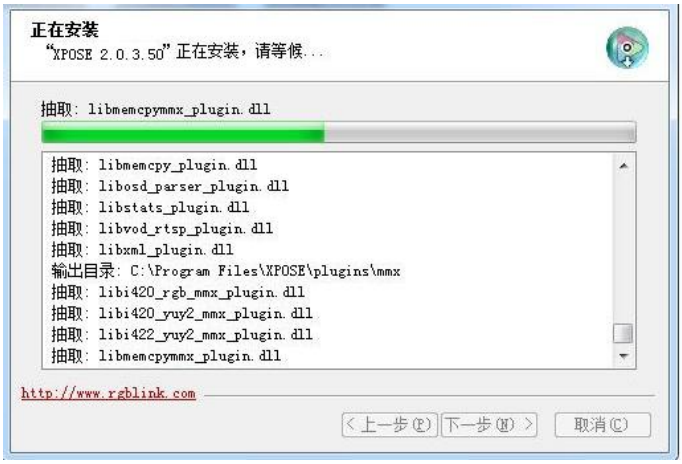


2. Click “Next” to install

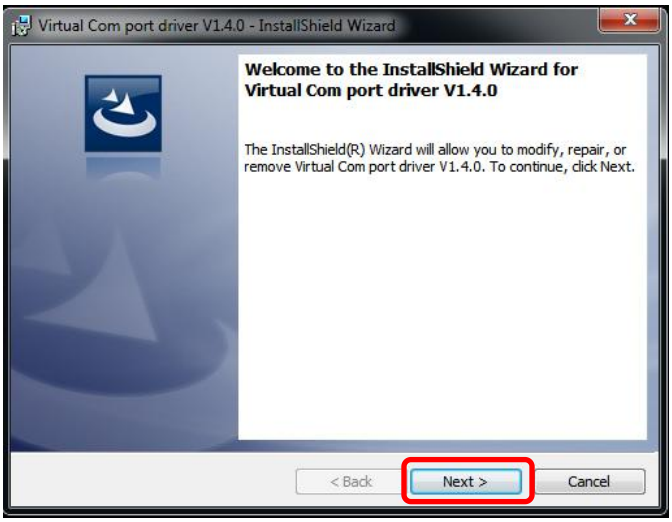


3. Click “Browse...” to select the XPOSE software install location

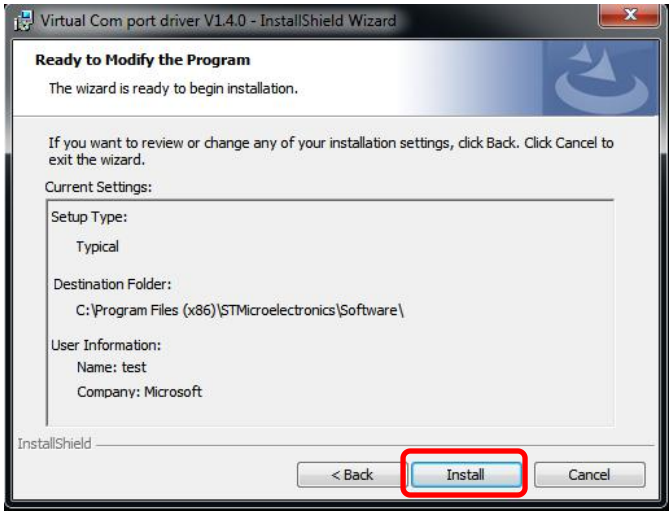
Click “Install”



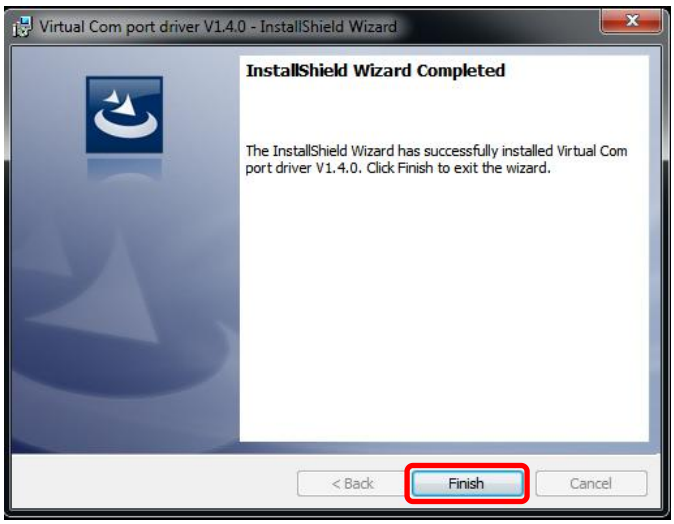
4. During installation, it will pop up the window of Install Shield Wizard for Virtual Com port



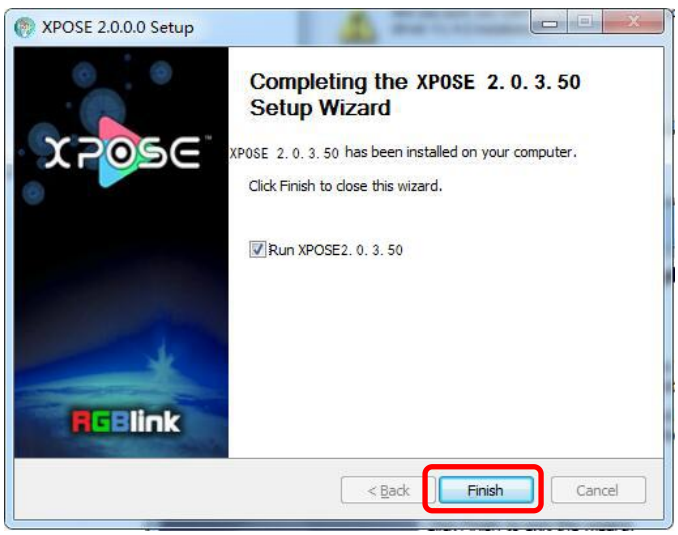
5. Click “Next”



6. Then click “Install", as shown in the figure

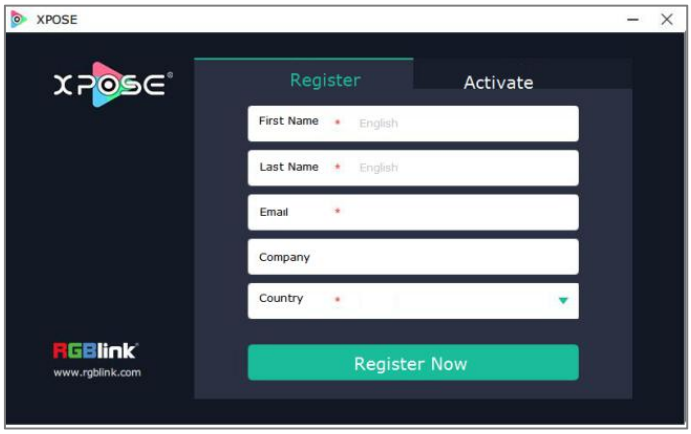


7. Click “Finish” and complete the installation, as shown in the figure below



8. Click “Finish” and is ready to run the XPOSE software

4.2 Log in XPOSE

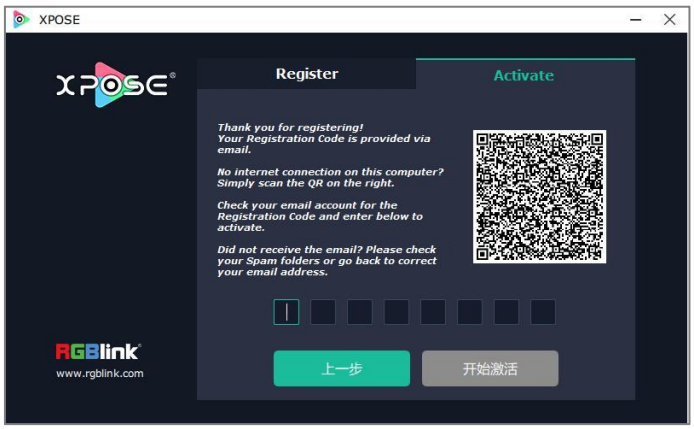


Double click this icon 

,and enter the log on interface as the picture.

The initial language of XPOSE 2.0 is self adjusted based on the operation system language of the computer. Click Register and fill in the blank with first name, last name, email, company and country and then click Register Now.

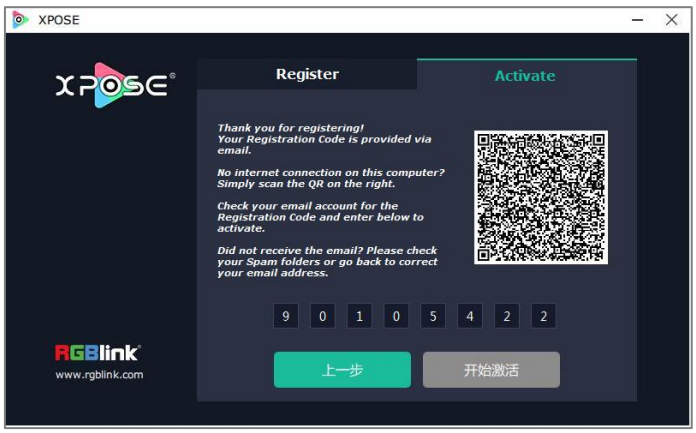
Note: The email shall be invalid and complete otherwise Registration&Activation code cannot be received.



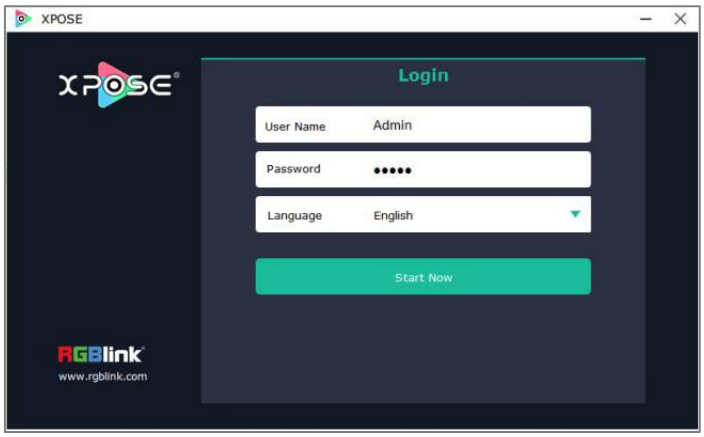
Click **Activate** and scan the QR code

An email from **RGBlink Registrations** will be sent to the **Register** email address.

Type in the activate code and confirm.

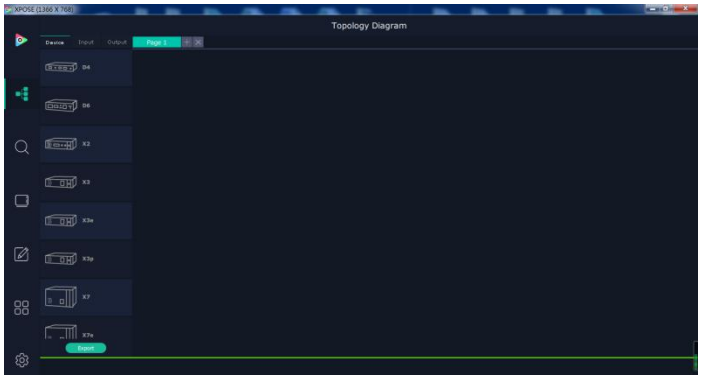


Type in the activate code and **confirm**.



Keep the user name as “Admin” and password blank and then click **Start Now.**

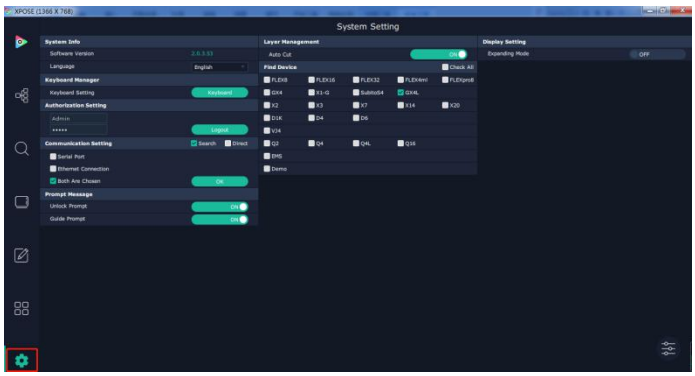
If exact Name and Password are needed, users can set up them in Authorization Setting under System Setting.



After login, users can find the management including:Topology Diagram,Search,Display System,Layer Management, Preset Management, Keyboard Settings. The details of each hierarchy will be described hereafter.

4.3 Software Operation

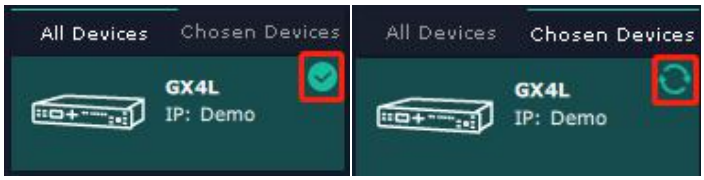
4.3.1 Find Device



1. Click  to enter <System Setting>interface.

2. New version of XPOSE 2.0 is blank default in Find Device. Users are supposed to choose the device needed in System Setting.

3. Click  to enter interface as shown in the left figure：



4. Click the device you need in the <All Devices> list,and click  in<Chosen Devices>,then GX4L will show in the main interface.

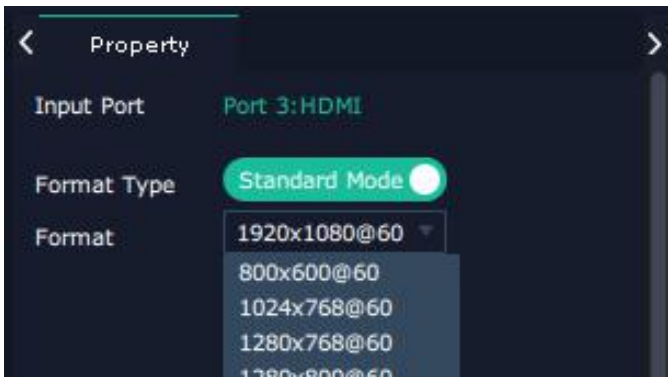
4.3.2 Input | Output | Overview

Input

Click any input port, the board where the port locates is selected. Users can do settings to the port now.
A **red** rectangle flashes around the chosen port when it is clicked.

Note: The signal port in operation is shown in green, and the signal port that has been connected but not in operation is not shown.

Standard Resolution

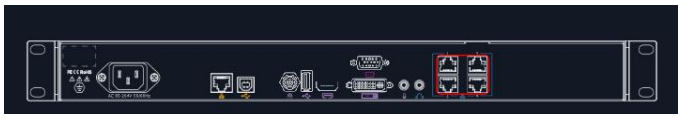


Standard resolution can be select as shown follow;
800×600@60|1024×768@60|1280×768@60|
1280×800@60|1280×1024@60|1366×768@60|
1440×900@60|1440×1080@60|1600×576@60|
1600×900@60|1600×1000@60|1600×1200@60|
1680×1050@60|1728×1298@60|1920×1080@60

Custom Resolution

You can also select to customize resolution,type in width,height and freq as shown in the figure.

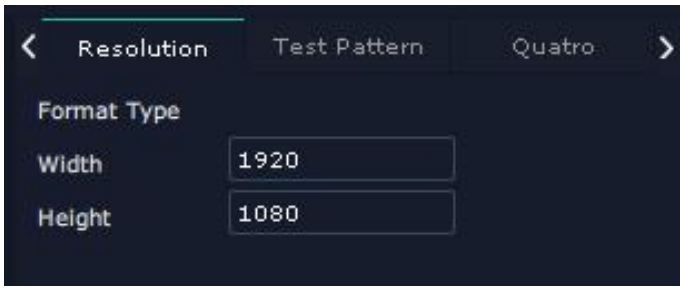
Output



Click any output port, the board where the port locates is selected. Users can do settings to the port now.A **red** rectangle flashes around the chosen port when it is clicked.

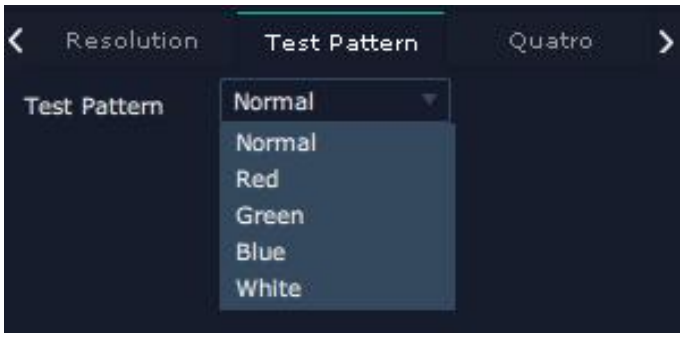
Note: The parameters of the four network ports are set synchronously.

Resolution



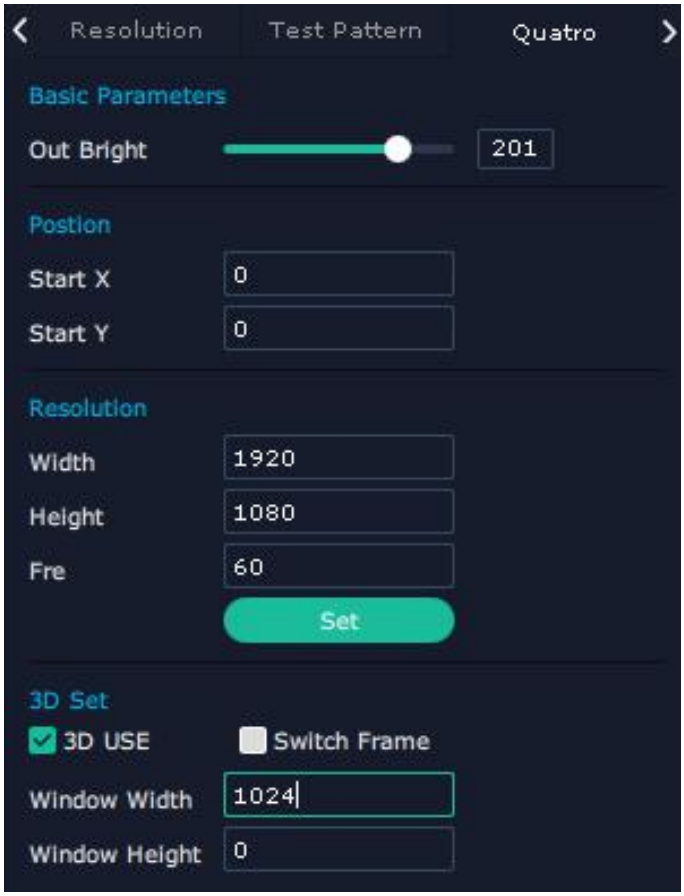
Type in width and height as shown in the left figure.

Test Pattern



You can choose Red/Green/Blue/White to test.

Quatro



Basic Parameters

Out Bright:0～255

Position

Adjust Start X/Y

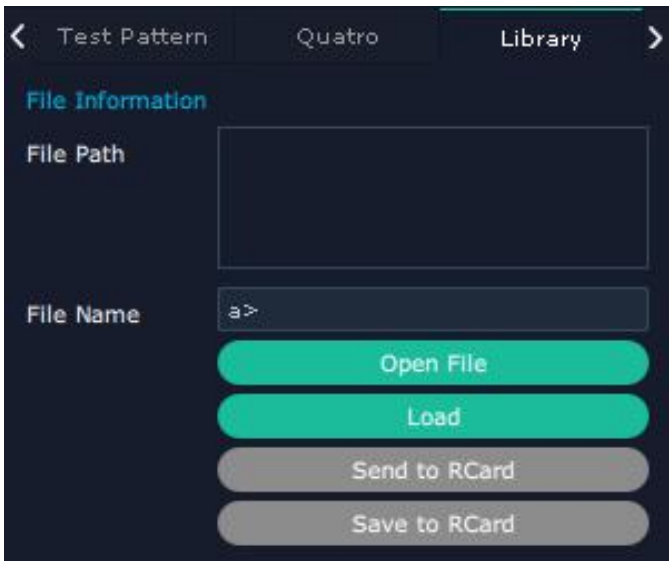
Resolution

After setting width/height/fre,click<Set>to confirm

3D Set

Click 3D USE,and type in Window Width/Height

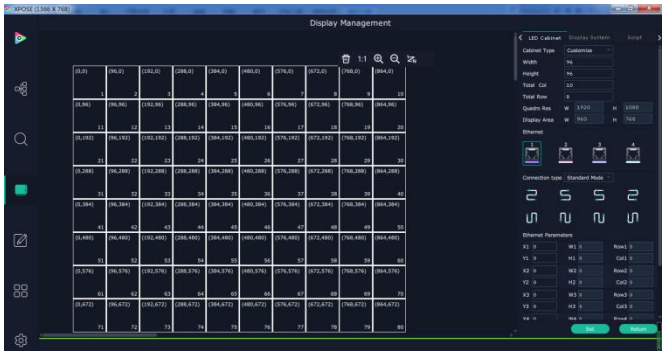
Library



Library is to load files,which has been set and saved in advance.

1. Click “Open File”to select the saved files.
2. Click “load”
3. Click“Send to RCard”,the parameters will be synchronized to the receiver card.
4. Click “Saved to RCard”,and you can load the parameters next time.

4.3.3 Display Management



Display Management is for users to set cabinet parameters.

Click this icon  first to enter the interface as shown in the left figure.

LED Cabinet

Cabinet Type

LED cabinet refers to the basic unit that makes up the LED screen.

Type in the Width/Height/Total Col/Total Row according to the actual situation on site.

Connection Type

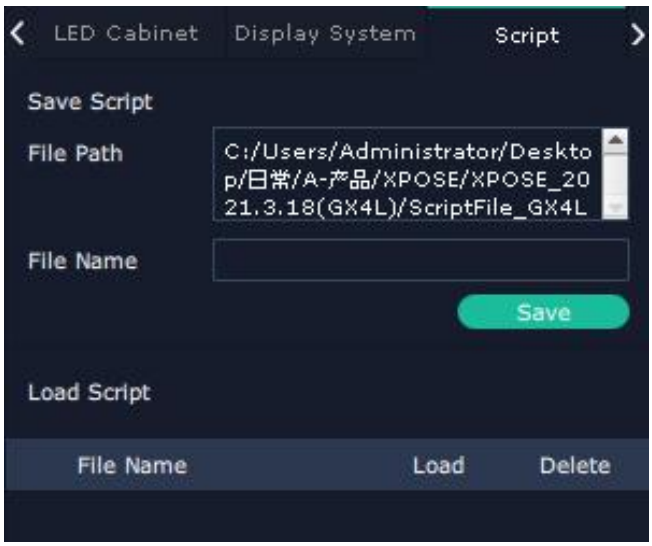
Standard Mode:8 modes as shown in the figure

Customize:press **Ctrl** and click **Left Mouse** to customize connection type according to the fact

Ethernet Parameters

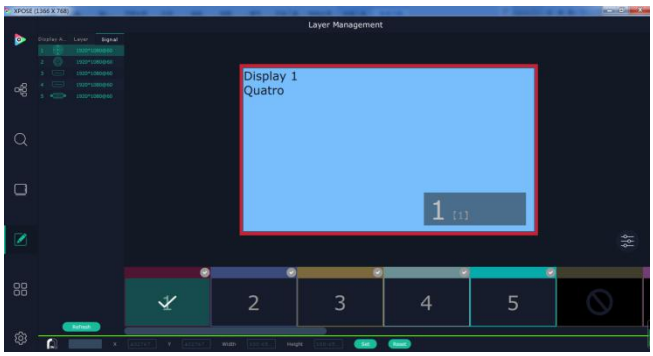
You can set parameters for port 1～4

Script



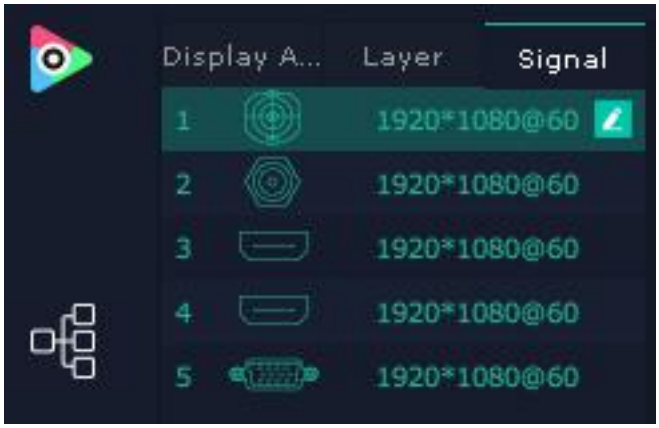
Save parameters of LED Cabinet,which has been set in last operation as script and load the files to apply next time.

4.3.4 Layer Management



Layer Management is designed to manage the layer of each monitor.Click this icon to enter the interface as shown in the left figure

Signal

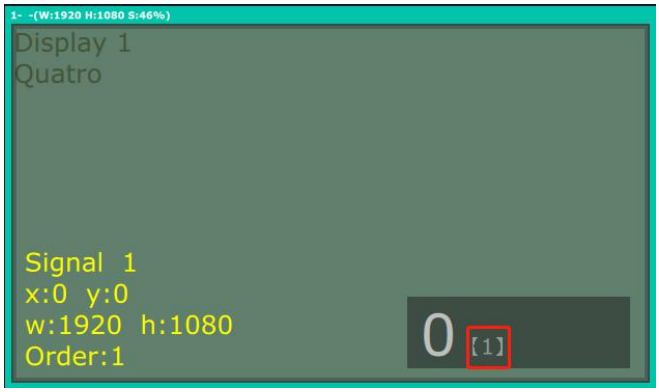


Signal list, showing all input signals and resolutions currently. You can drag the signal to the display.

click ,users can rename the input signal

click to confirm.

Layer



Layer number: Numbers in the corner is to show how many layers at present allowed to put in the output.

Layer Movement

Place the cursor on the layer, it turns to a palm icon , press the left of mouse, the icon turns to a fist , moving the mouse can drag the layer.

Layer Adjustment

there are three ways to adjust layer.

1.Click the icon in the top right corner

:to crop the layer

:lock the layer to prevent misoperations

:max to cover up the monitor.

: cover up all monitors in the same screen group with the one signal.

2. Use the bar under the interface

Choose one layer and the bar shows its signal source, type in position and size.click Set to confirm.

3. Layer Scale and Crop

Choose one layer needed to be adjusted,and type in its position and size.

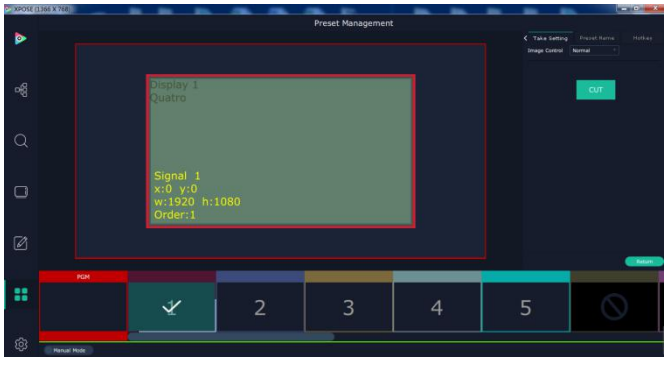
this icon means data related, when width is changed, height will be changed as same proportion.

this icon means data not related, width and height need to be filled respectively.

After setting the parameters,click in the right corner to save the bank.

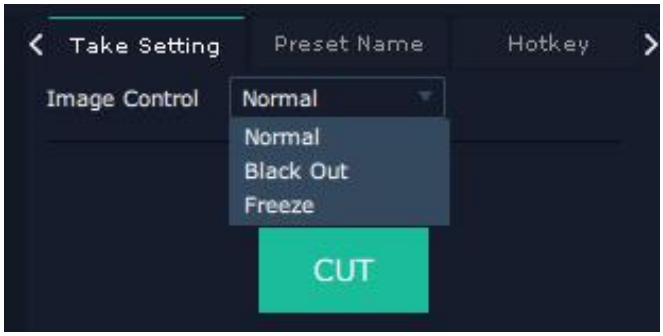
GX4L can save up to 5 banks.

4.3.5 Preset Management



Preset Management is designed to switch bank (scene setting done in last step).

Take Setting



Cut

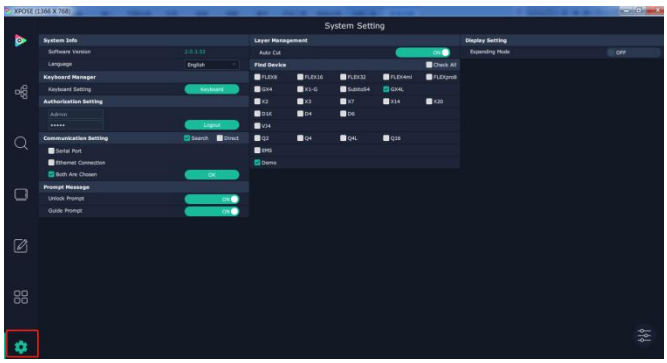
Cut, switch from PST to PGM immediately

Image Control

You can choose Normal/Black Out/Freeze

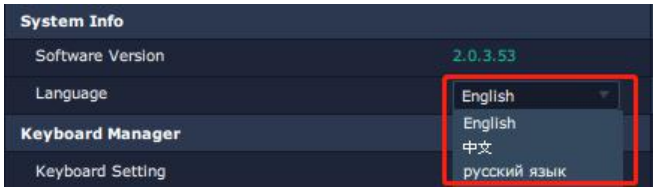
Hotkey

4.3.6 System Setting



Click  to enter <System Setting>interface.

System Info

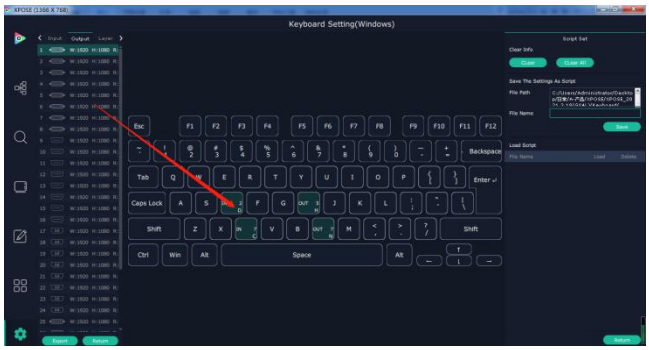


Software Version: check current version

Language: Chinese/English/Russia

Keyboard Manager

Keyboard setting is designed to fit for different operation system such as Windows and Mac. Users can set short **cut keys.**



Drag Input, Output, Layer and Preset from the list

to the keys you desired as shown in the figure:

Please note the keyboard area where allows to set short cut keys

Script Set

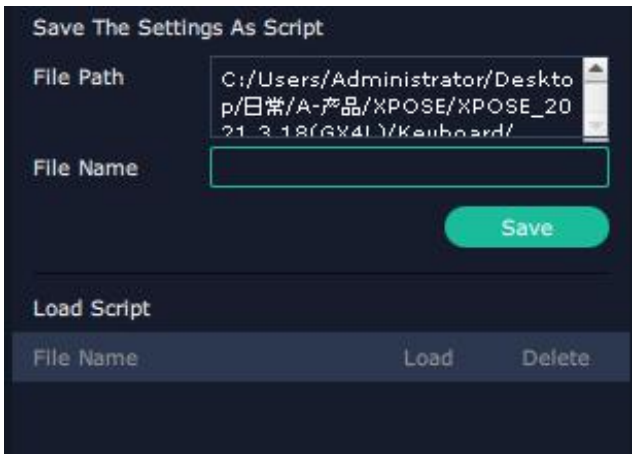
Clear Info

If the setting goes wrong or no need for short cut keys any more, click  to clear some keys or clear all.

Clear: is to clear some keys, the keys need to selected before hand.

Clear all: is to remove all already set short cut keys.

Users can also save the keyboard setting as script.



Save the settings as script

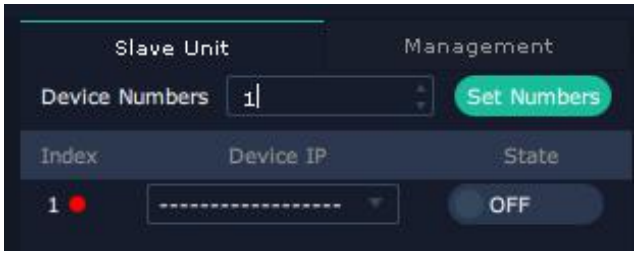
File Path: Save the current keyboard Settings in the script to the local path

File Name: script file name

Load Script: Load/Delete

Click Return to back to <system setting>

Authorization Setting

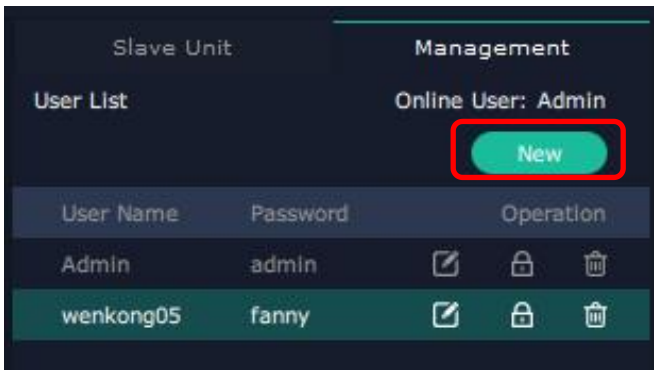


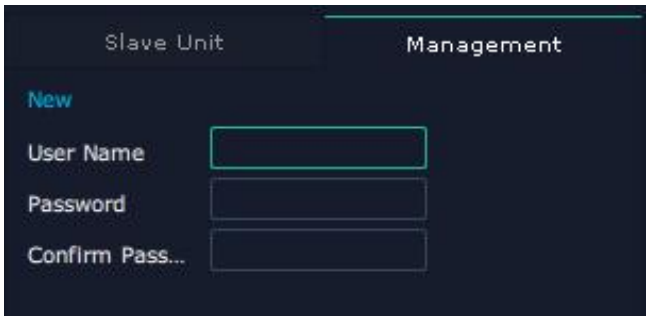
Slave Unit：

Click **Slave Unit**

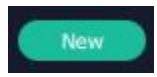
Slave Unit is to control multiple devices simultaneously, which are connected to same network. (“In the same network” means that the the third section in the IP address digits are the same) XPOSE do operation on one device, same operation synchronized to other devices. For example, there is another devices linked to the same network, one with IP IP192.168.0.45

1. Set device numbers；
2. Select the IP of the device in the drop-down menu for Device IP
3. click **ON,**the tow device are connected when the red pot turns to be green one.
4. click **OFF to disconnect,** it could not control two device at the same time.





Management



New:Add new USER NAME and PASSWORD

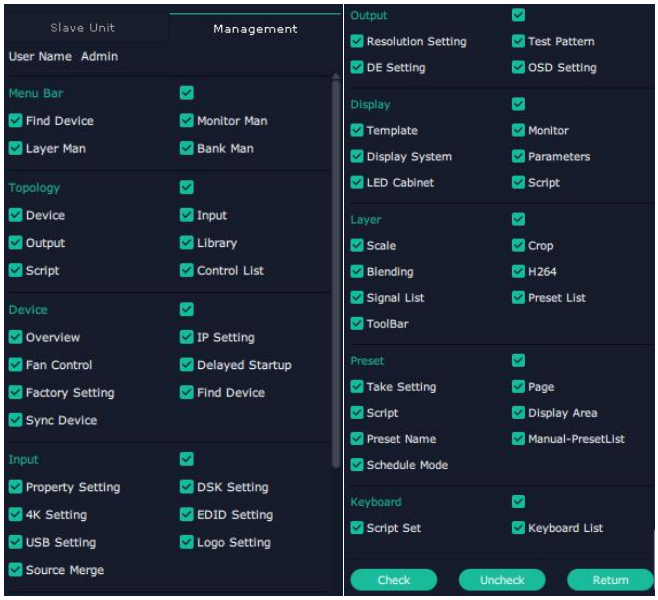
Click the green block to remove the function not to be permitted.

Click “**new”,**type in User Name and Password.

Edit: Edit user name and password already built.

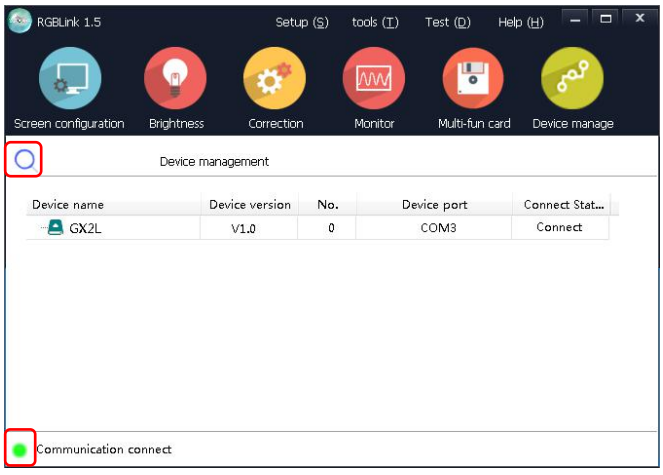
Delete: Delete user name and password already built.

Permission: functions on this XPOSE 2.0 on this computer that the users are allowed to operate.



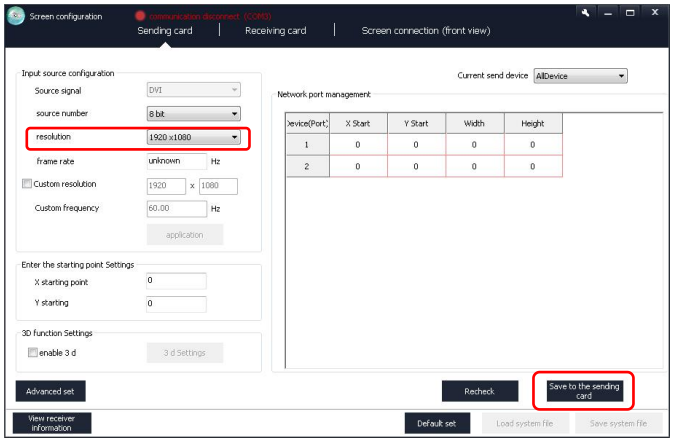
Authorization Set: click on the function that allows other users to take action

4.4 Parameter Adjustment of Receiver Card and Sender Card



1. Check the connection status of device.

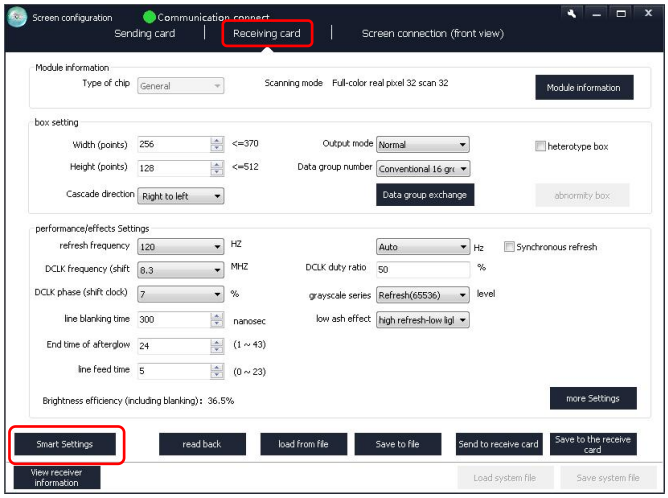
Every time when you unplug the card,please click to search the device again.



2. Click "Screen Configuration" to enter Sending Card interface.

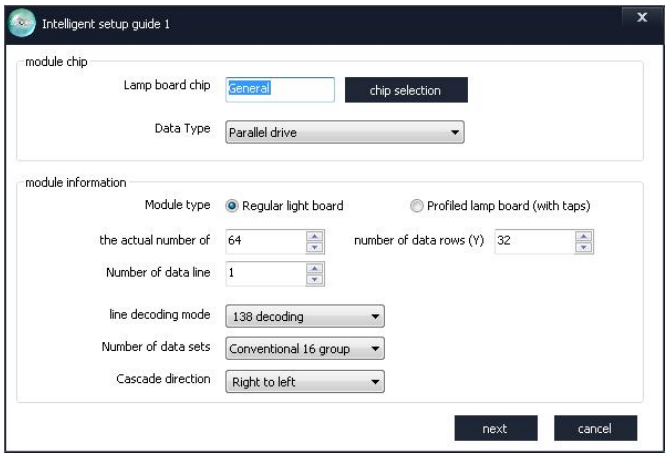
Please ensure that the **resolution** of sending card should be the consistent with that of your computer.

Note: After setting the sending card, it is necessary to click "Save to the sending card", otherwise the previous setting will be lost after power off and restarting.



3. Click "Receiving Card" to enter the interface as shown in the left figure.

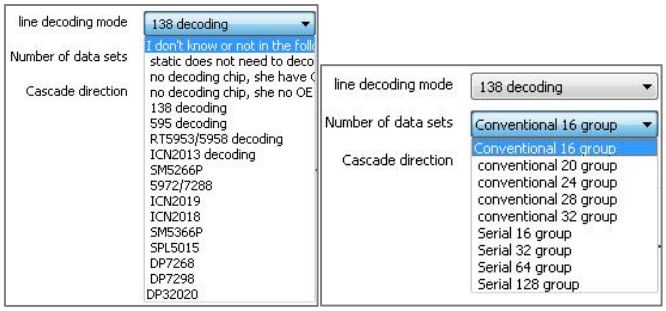
4. Click "Smart Settings" to set receiving card.



5. **Chip selection:**select the chip for the corresponding module.

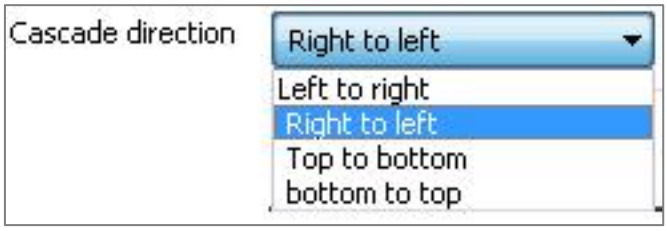
Data Type: It is generally to choose parallel driver for common modules by default (If you would like to customize some modules needed to select serial data, please contact with our company.

Module Type: If width of single module is 16,then choose "Regular light board".If not,then choose"Profiled lamp board(with taps)".



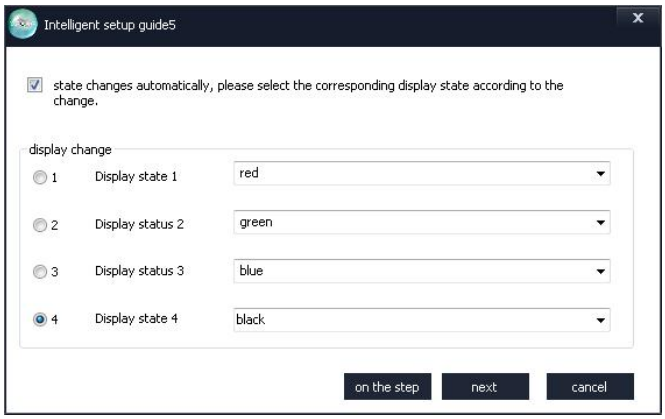
the actual number of:the width of single module
Number of data rows:the height of single module
Number of data line: It can be viewed according to the number of RBG groups defined by the module interface.

Line decoding mode:as shown in the left figure



Number of data sets: Conventional and Serial can be selected.

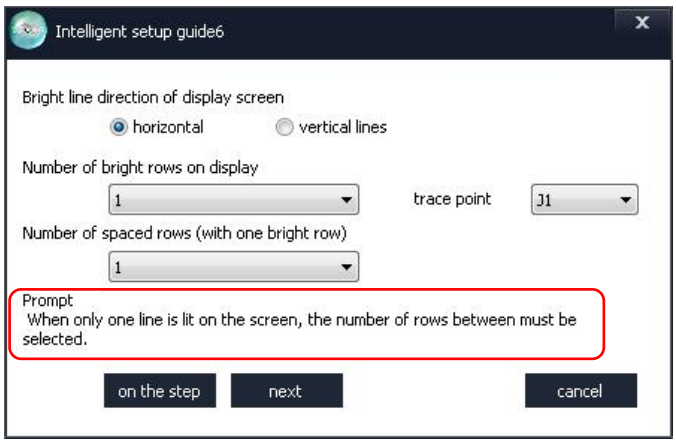
Cascade direction: Left to right/Right to left/Top to bottom/Bottom to top



6. Users can remove the √ of "state changes automatically", and click 1/2/3/4 to change the display state according to the observation of the LED screen.

For example,click "1" and observe the color of LED screen,and select "red" if the LED screen shows red.

After all 4 states being done,click "next"



8. Select "horizontal or vertical lines" according to the actual bright line direction of display screen.

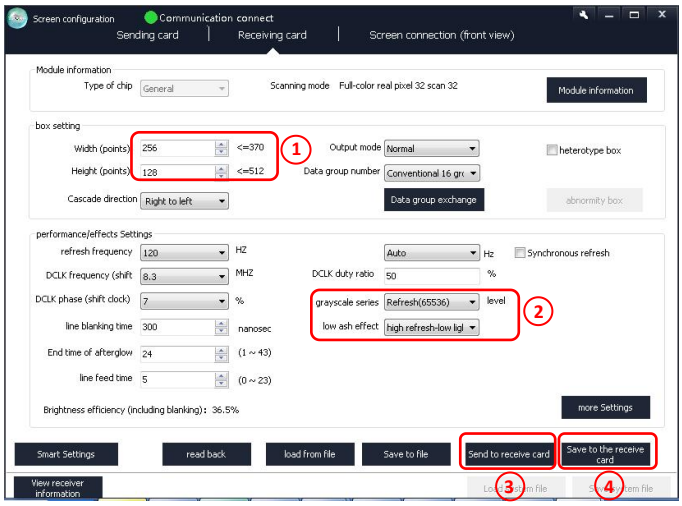
Number of bright rows on display:according to the LED screen

Number of spaced rows: When only one line is lit on the screen,the number of rows between must be selected.

7. Observe the position of the bright spot on the first module of the LED screen, and click the corresponding grid.
If you make a mistake,click "back" to the last step or "reset" to restart.

If you select "Profiled lamp board(with taps)" in 5th step,you need to click blank spots.Observe the first module,and click "unbright spot(blank spot)" if no flash spot appears.

After the settings, a prompt will pop up. Click "OK" and then click "Finish" to confirm.



9. After <Smart Settings>,it will return to <Receiving card>interface and set a new parameters for receiving cards.

①Fill in the total Width/Height of box.

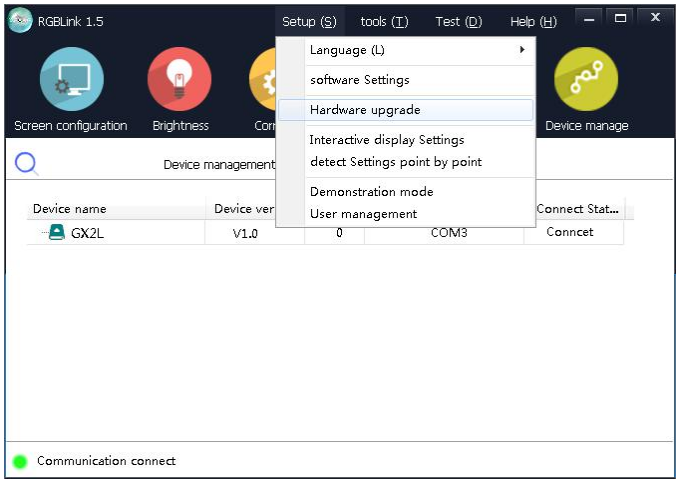
There is no need to adjust other parameters if the image of the single receiving card is normal.

② It is recommended to change "grayscale series" and "low ash effect" to change the refresh rate.

③ **Send to receive card:**Each time you change the parameters, you can click "Send to receive card" and observe the change of the screen.

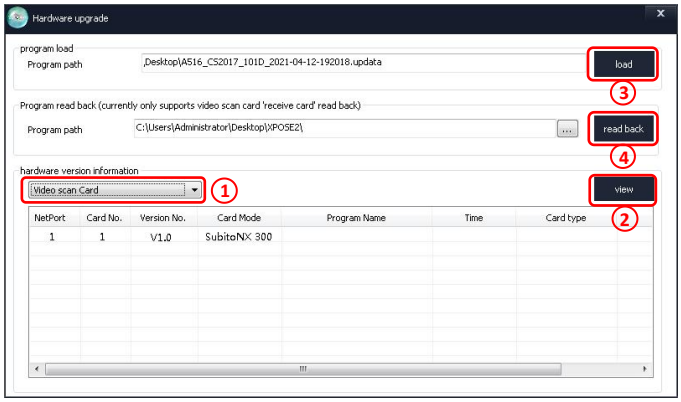
④ **Save to the receive card:**After debugging,click "Save to the receiving card" and the data will not be lost after power off and restart.

4.5 Upgrade



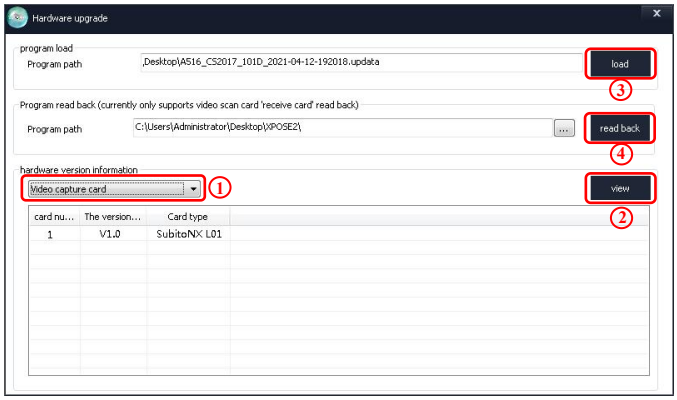
1. Click "Setup" -- "Hardware upgrade".

2. Type in password "admin" or 168.



① Select "Send Card"
② View the version
③ Load corresponding send card
④ Click "upgrade"

Note:during the upgrade process, do not unplug the serial port to prevent communication disconnection.



① Select "Receive Card"
② View the version
③ Load corresponding send card
④ Click "upgrade",do not unplug the serial port to prevent communication disconnection

Chapter 5 Ordering Codes

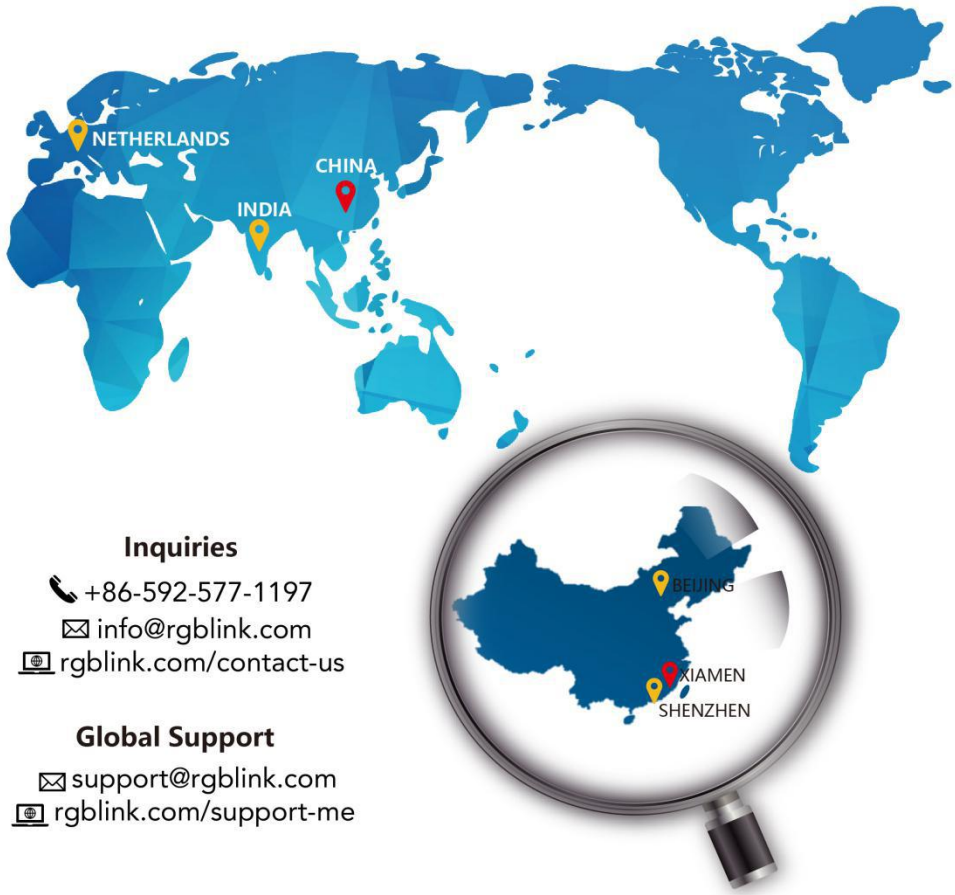
5.1 Product

820-1004-03-0 GX4L

Chapter 6 Support

6.1 Contact Us

www.rgblink.com



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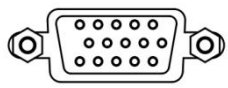
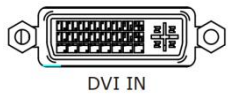
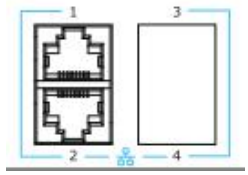
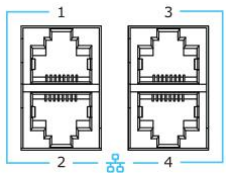
Chapter 7 Appendix

7.1 Specification

CVBS Input	
Number of Inputs	1
Connector	BNC
Interface Appearance	 CVBS IN
Supported Standard	PAL/NTSC
Signal Level	1Vpp±3db (0.7V Video+0.3v Sync) 75 ohm
Supported Resolution	480i | 576i

VGA Input	
Number of Inputs	1
Connector	DB15
Interface Appearance	 VGA IN
Supported Resolution	VESA 800×600@60 | 1024×768@60 1280×1024@60 | 1440×900@60 | 1600×1200@60
Supported Standard	VGA-UXGA
HDMI Input	
Number of Inputs	2 （1 IN|1LOOP）
Connector	HDMI-A
Interface Appearance	
Supported Resolution	SMPTE 625/25/50 PAL, 525/29.97/59.94 NTSC, 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@60
Supported Standard	HDMI 1.3
DVI Input	
Number of Inputs	1
Connector	DVI-I

Interface Appearance		
Supported Resolution	SMPTE 480i NTSC,576i PAL, 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@60	
Supported Standard	Single Link	
Output(GX2L)		
Number of Inputs	2	
Connector	RJ45	
Interface Appearance		
Supported Resolution	Each Port	
	Capacity	1310000 pixels
	Horizontal Range	3840 pixels
	Vertical Range	1920 pixels
Output(GX4L)		
Number of Inputs	4	
Connector	RJ45	
Interface Appearance		
Supported Resolution	Each Port	
	Capacity	2310000 pixels
	Horizontal Range	3840 pixels
	Vertical Range	1920 pixels

Accessories and Operating Condition	
Communication	RJ11/RS232 USB 2.0
Input Voltage	AC100-240V/50-60HZ
Max Power	25W
Working Temperature	-20°C~70°C
Working Humidity	10%~85%
Warranty	3 years

7.2 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.

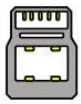
●**ST:** (Straight Tip) was invented by AT&T and uses a bayonet mount along with a long spring-loaded ferrule to support the fiber.

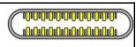
●**USB:** Universal Serial Bus is a standard that was developed in the mid-1990s that defines cables, connectors and communication protocols. This technology is designed to allow a connection, communication and power supply for peripheral devices and computers.

●**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.

7.3 Revision History

The table below lists the changes to the User Manual.

Format	Time	ECO#	Description	Principal
V1.0	2021-05-07	0000#	Release	Sylvia
V1.1	2021-06-25	0001#	Update the interface of card adjustment	Sylvia