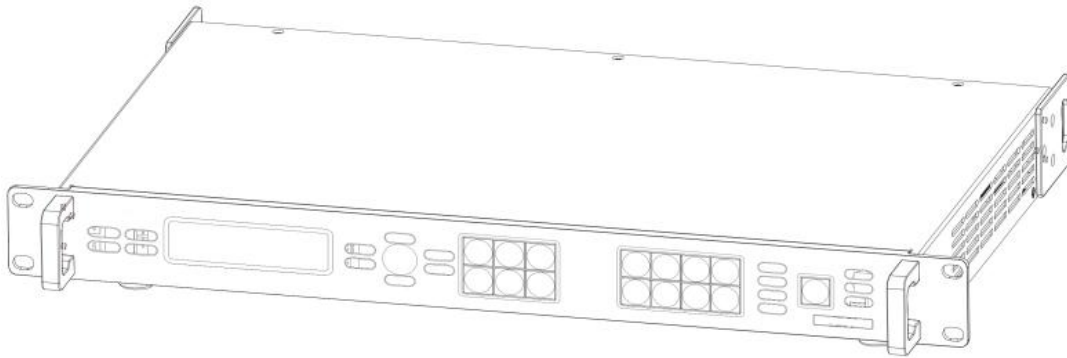


GX4



USER MANUAL

RGBlink[®]



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Thank you for choosing our product!

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

Declarations

FCC/Warranty

Federal Communications Commission (FCC) Statement

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

Guarantee and Compensation

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

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

If the purchaser or a third party carries out modifications or repairs on goods delivered by RGBlink, or if the goods are handled incorrectly, in particular if the systems are commissioned operated incorrectly or if, after the transfer of risks, the goods are subject to influences not agreed upon in the contract, all guarantee claims of the purchaser will be rendered invalid. Not 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 GX4 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 GX4 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.

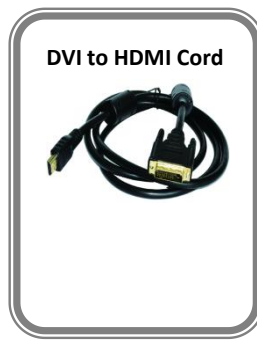
Once you have removed all the components from their packaging and checked that all the listed components are present, visually inspect the system to ensure there was no damage during shipping. If there is damage, notify the shipping carrier immediately for all claims adjustments.

Site Preparation

The environment in which you install your VENUS X1 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



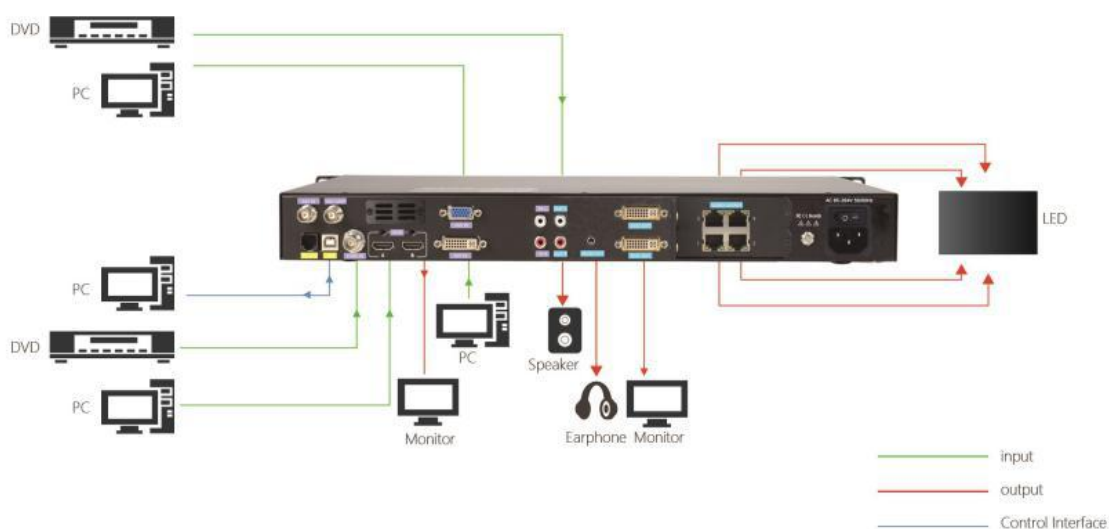
Note:

AC Power Cable supplied as standard according to destination market.

1.2 Product Overview

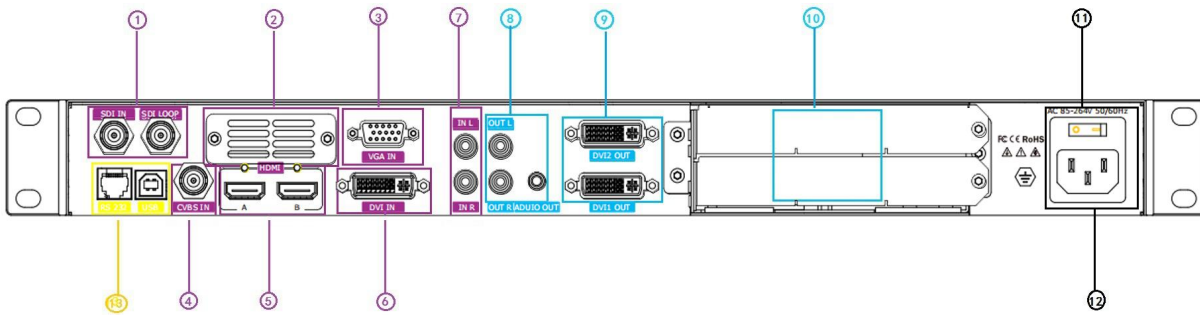
GX4 is a video processor which supports DVI output resolution at 2048x1152@60 and offers multiple test pattern output resolution options. Beside standard with a 1 HDMI (with loop), 1 CVBS, 1 VGA, 1 DVI and 1 pair of Audio analog connectors, it also comes with 1 empty module slots for any single input modules selecting from HDMI,DP,DVI,SDI,VGA,CVBS and USB modules. Capability of support any input makes GX4 have features of PIP (dual pictures),synchronized video with audio control and seamless switching between different inputs. Moreover Extended Display Identification Data(EDID management) make sure display perfectly spot to spot.

GX4 can work as LED display controller when universal senders cards is installed. There are 2 empty slots fitting for one 2.6mega pixels sender card or two 1.3mega pixels sender cards. RGBlink dedicated sender card module Subito™ Quatro is an also an option to control LED display. It provides 2.3 mega pixels display up to horizontal 3840 pixels or vertical 2048 pixels, through 4 RJ45 ports.



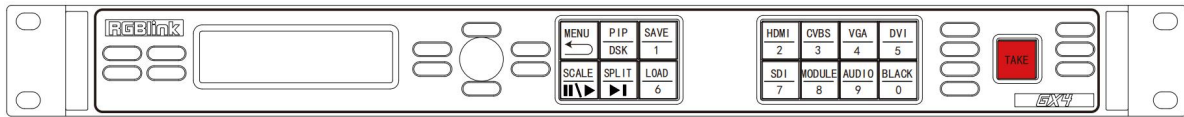
GX4 with Subito Quatro Module

1.2.1 Rear Panel




INPUT CONNECTORS		OUTPUT CONNECTORS	
1	SDI in and SDI loop	8	Audio Output
2	1 slot for optional single input	9	DVI Output
3	VGA input	10	Slots preserved for sender cards
4	CVBS Input	CONTROL PORT	
5	HDMI In/Loop		
6	DVI input	13	USB-A
7	Audio input		RS232
POWER			
11	Power switch		
12	Power IEC-3		


1.2.2 Front Panel




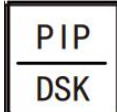



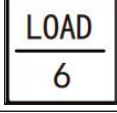
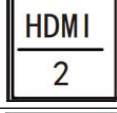
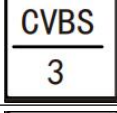
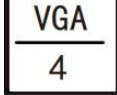
OLED Display

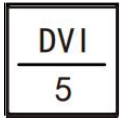

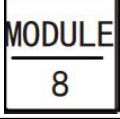
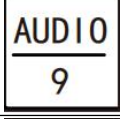
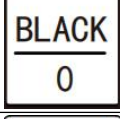

	<p>Displays current status of the product, and for feature selections provides interactive choices in conjunction with buttons on the front panel.</p>
---	--

Rotary Knob

	<p>This knob used for menu selections and confirmation. turn to left and right to select menu item and push to confirm selection.</p>
---	---

Buttons

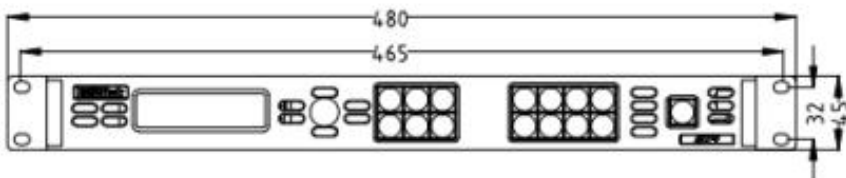
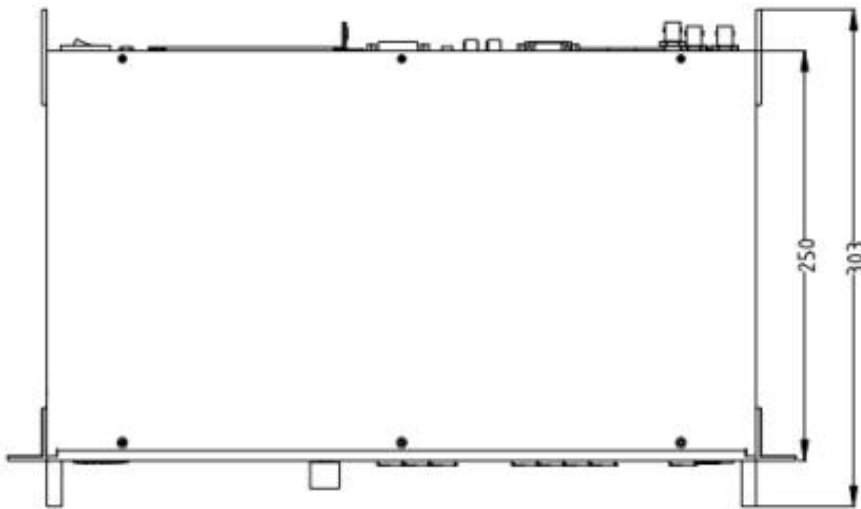
	<p>This button used for menu selections Push the button again will return to the last level menu or exit the menu.</p>
	<p>PIP/DSK Button PIP and DSK function reuse button. Push the button to enter to the PIP menu items.</p>
	<p>This button used for size and position adjusting. When input USB signal, it reused the stop and play button, push the button to stop or play the USB video file.</p>
	<p>Split function button. When connect USB signal, it reused the move next button, push the button to play the next USB video file.</p>
	<p>Save all current settings to 1 -16 scene and Number 1.</p>
	<p>Restores/Loads saved setting from 1-16 scene and Number 6.</p>
	<p>HDMI input source selection and Number 2</p>
	<p>CVBS input source selection and Number 3</p>
	<p>VGA input source selection and Number 4.</p>

	CVBS input source selection and Number 5.
	SDI input source selection and Number 7.
	After optional input module is fitted, this button is to select the optional input source. Number 8.
	Short cut button of Audio Menu and Number 9
	Short cut button of Black Out and Number 0.
	Switch button with transition effect.

1.2.3 Dimension

Following is the dimension of GX4 for your reference::

Dimension:480mm×303mm×45mm



Chapter 2 Install Your Product

2.1 Plug in Signals

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

2.2 Plug in Main Power

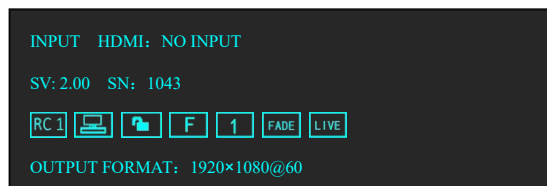
Connect IEC cable to device and plug into wall socket. Turn on power at wall socket.

2.3 Turn on Your Product

Turn the power switch on the rear to ON position.

TST 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 Button

Push **【MENU】** button to enter main menu.

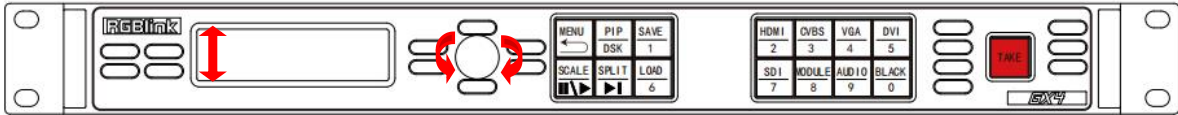
Turn the knob to select corresponding menu item.

The symbol > indicate that the item is selected.

Push the knob to confirm the operation.

The symbol * means the selected item is under editing state, ready to be set or checked

The operation diagram is as follows:



3.2 MENU Structure

The MENU structure is shown in the figure below:

LED CONFIG	OUT BRIGHT	INPUT	OUTPUT	TRANSITION
QUICK CONNECT		INPUT INFO	OUTPUT INFO	MODE
CUSTOM CONNECT		SIZING ADJUST	OUTPUT FORMAT	DURATION
ADVANCED		USB CONTROL	OUTPUT ADJUST	ALPHA
CONFIG FILE		VGA ADJUST	SCREEN	DEINTERLACE
		ADC ADJUST	RATIO	IMAGE ENHANCE
		SDI ADJUST	PICTURE	TAKE
		EDID MANAGE	TEXT OVERLAY	
		VGA TYPE	DISPLAY MODE	
		DVI (4 IN 1)	GAMMA	
AUDIO	SPLIT	SYSTEM	LANGUAGE 语言	FACTORY RESET
MUTE	SPLIT ON/OFF	SYSTEM INFO	LANGUAGE 语言 EN/中文	FACTORY RESET
VOLUME	H TOTAL	TECH SUPPORT		
AUDIO IN	V TOTAL	WORK TIME		
HDMI INTERNAL/EXTERNAL	H POS	LOCK FRONT PANEL		
	V POS	LICENSE SETUP		
	H SIZE	HOT BACKUP		
	V SIZE	DELAY RECALL		
	RESET			

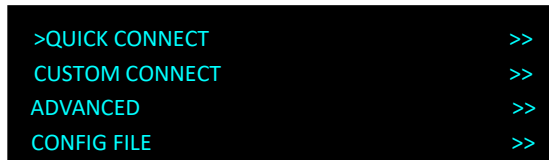
3.3 Use the Menu

Use the menu system for convenient and intuitive operation. GX4 TST display shows the menu items. The TST display will show the default state when the menu is not in use, or the operation has timed out. Using the 【MENU】 button and rotary knob in the front panel, the TST display will show the corresponding menus according to user selections.

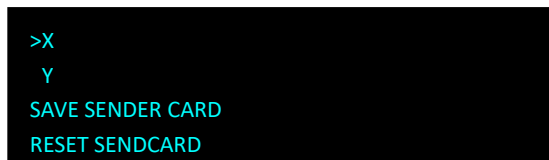
3.3.1 LED Configuration

GX4 is installed with Subito™ Quatro Sender Module or other universal sender card can set Led Configuration in the Menu. Here is the led configuration sub-menu.(LED configuration of other sender card is to be developed)

1. QUICK CONNECT



1.1 SEND CARD SET



X,Y : the horizontal and vertical position of the display that the Sender card control the on LED screen

One port of Subito Sender can control 650K pixels. If a LED screen is under 650K pixels X,Y can be 0.

X maximum 1920

Y maximum 1080

SAVE SENDER CARD: save the X,Y setting to sender card.

RESET SEND CARD: reset sender card if parameters set above is not proper.

1.2 RECEIVE CARD SET

>CHOOSE CABLE	1
HORIZONTAL CARD	1
VERTICAL CARD	3
WIDTH	128

HEIGHT	192
>HOR OFFSET	0
VER OFFSET	0
CONNECT TYPE	>>

CONNECT TYPE	
SAVE TO RECEIVER CARD	

2 5 3 2 1 1 1 1 1

CHOOSE CABLE:choose the output LAN port on the Sender. There are 4 ports available.

HORIZONTAL CARD: how many receive cards needed to receive the data that the chosen sender port offer

WIDTH: width of each led cabinet

HEIGHT:height of each led cabinet

HOR OFFSET: horizontal offset, -1-4095

VER OFFSET: vertical offset,-1-4095

CONNECT TYPE: the connection type of led cabinet.

There are 8 types available .

SAVE RECEIVER CARD: save setting above to receiver card.

1.3 RESET ALL CARD: reset all sender card and receiver card.

1. ADVANCED

>COLOR TEMP	>>
SYSTEM INFO	>>
OSD CONTROL	>>
TESTMODE	NORMAL

CLS SWITCH	OFF
>LOCK SWITCH	OFF

1.1 COLOR TEMP

>COLOR DEPTH	8 BIT
>RED	255
GREEN	255
BLUE	255

```
SENDCARD GAMMA          2.8
SAVE TO SEND CARD
```

color temperature adjustment for led screen

Color Depth: 8 bit, 10 bit, 12 bit

RED, GREEN, BLUE: value range from 0 to 255

SENDER CARD GAMMA: value from range 0.0 to 9.9

SAVE TO SENDER CARD: save above setting to sender card

1.2 SYSTEM INFO: sender version

1.3 OSD CONTROL

```
>OSD ENABLE             ON
CONTENT                 POSITION
TEMP MODE               F
```

OSD ENABLE: ON or OFF

CONTENT: POSITION or STATE

TEMP MODE: Fahrenheit or Celsius

TEST MODE: BLACK, GRIDDING, SWEEP, GRADUAL W, GRADUAL B, GRADUAL G, GRADUAL R, WHITE, BLUE, GREEN, RED, NORMAL.

2.4 CLS SWITCH: Clean LED screen Switch when the switch is ON, the LED screen will be black.

2.5 LOCK SWITCH: lock the Led screen, when the it is ON, the led screen will be frozen.

2. CONFIG FILE

```
>CHOOSE CABLE          ALL
CHOOSE RECEIVER        ALL
PREINSTALL FILE        >>
```

Users can load LED configuration files from LED manufacturers to the GX4 devices by XTOOL. There are 15 manufacturers items in the sub-menu and each manufacture can store 16 files. 270 files in total allow to be loaded.

3. OUT BRIGHT

Output brightness to adjust the brightness of LED screen, value ranging from 0-255

3.3.2 Input

1. INPUT INFO

Show the current input format and resolution

INPUT INFO	>>
SIZING ADJUST	>>
USB CONTROL	>>
VGA ADJUST	>>
ADC AJUST	>>
SDI ADJUST	>>
EDID MANAGE	>>
VGA TYPE	VGA
DVI4 In1	NO EXT

2. SIZE ADJUST

H SIZE	1024
V SIZE	768
H POS	0
V POS	0
RESET SIZE	
MASK TOP	>>
MASK BOTTOM	>>
MASK LEFT	>>
MASK RIGHT	>>
RESET MASK	

H SIZE:set the horizontal pixels of input image to zoom or scale the input signal

V SIZE:Set the vertical pixels of input image to zoom or scale the input signal

H POS:set the horizontal position of image

V POS:set the horizontal position of image

RESET SIZE:if the size is not proper, turn knob to RESET SIZE and press knob

MASK TOP:crop the top of image

MASK BOTTOM:crop the bottom of image

MASK LEFT:crop the left part of image

MASK RIGHT:crop the right part of image

RESET MASK:if the crop not proper, turn knob to RESET MASK and press knob.

3. VGA ADJUST

Non-standard VGA input signal can cause the input image shifting or not in full screen, therefore, users need to adjust VGA input as follows:

After selecting <AUTO AJUST> the device will automatically adjust the H POS,V POS, CLOCK and PHASE to make input image no shifting and full screen.

```
H POS          0
V POS          0
CLOCK         0
PHASE         0

>AUTO ADJUST
```

Note:If one <AUTO AJUST> cannot meet the needs, users can do <AUTO AJUST> many times. The system can automatically save the ADJUST parameter. Users can also go to <AUTO AJUST> by pressing 【VGA】 button for 10s.

4. ADC ADJUST

```
>AUTO ADJUST  >>
RESET         >>
```

AUTO ADJUST: YES <OK>,NO <MENU>

RESET: YES <OK>,NO <MENU>

5. SDI ADJUST

```
H POS          127
V POS          127
ANTI ALIAS     STEP_0
RESET
```

GX4 with SDI optional module come with SDI ADJUST in the menu.

6. EDID MANAGE

```
DESTINATION    HDMI
SOURCE         RGB DVI
```

DESTINATION: DVI or HDMI

SOURCE: RGB DVI, RGB HDMI, FOLLOW, CUSTOM

```
CUSTOMIZE:
>1920x1080@60
```

CUSTOM EDID

Customize resolution for EDID

7.VGA TYPE

Choose signal type for VGA button. VGA or YPbPr.

8.DVI4In1 (DVI 4 In 1)

GX4 with optional DVI module installed comes with such signal types as VGA, DVI, CVBS, YPbPr. It is offered to users to choose the signal type through the DVI connector which is compatible with VGA, DVI, CVBS, YPbPr via adapter.

3.3.3 Output

```
OUTPUT INFO >>
OUTPUT FORMAT >>
OUTPUT ADJUST >>
SCREEN >>
```

```
RATIO NORMAL
TEXT OVERLAY >>
DISPLAY MODE >>
GAMMA LINEAR
```

1. **OUTPUT INFO:** show current input information

```
>1920x1080@60
DVI MODE DVI
BITS 8 BIT
COLOR SPACE IMAGE
```

```
DE OFF
DE H POS 185
DE V POS 41
DE H SIZE 1920
```


```
DE V SIZE 1080
H POLARITY POS
V POLARITY POS
```

2. **OUTPUT FORMAT**

```
>STANDARD >>
CUSTOMIZE >>
```

2.1 STANDARD: standard output resolution, 26 types available to choose from 720x480i@60 to 2560x816@60

2.2 CUSTOMIZE: custom resolution



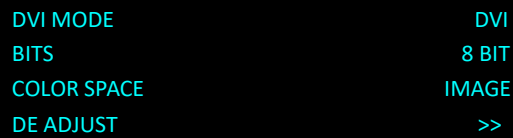
```
CUSTOMIZE:
>1920x1080@60
```

Turn the knob to resolution line and press the knob ">" (arrow) change to "*" (star) put in the numbers for width, then press the knob to confirm the number.

Put in the numbers for height and frame rate in the same way.

Note: The number buttons lighting up indicate that users can use button to key in numbers.

3. OUTPUT ADJUST



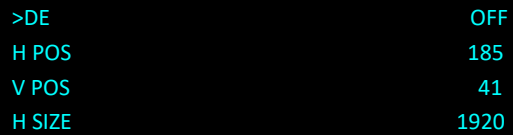
```
DVI MODE          DVI
BITS              8 BIT
COLOR SPACE      IMAGE
DE ADJUST        >>
```

DVI MODE: DIV or HDMI

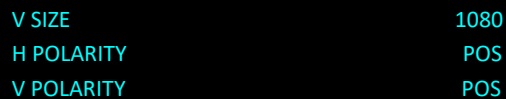
BITS: DVI 8bit ,HDMI 8/10/12 bit

COLOR SPACE: IMAGE or VIDEO

DE ADJUST



```
>DE              OFF
H POS            185
V POS            41
H SIZE           1920
```



```
V SIZE           1080
H POLARITY       POS
V POLARITY       POS
```

DE: ON or OFF

H POS: horizontal position, value from 0 to 1920

V POS: vertical position, value form 0 to 1080

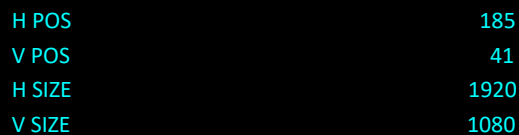
H POLARITY:horizontal polarity, POS (positive) or
NEG (negative)

V POLARITY:vertical polarity,

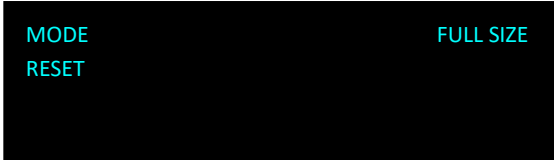
POS (positive) or NEG (negative)

RESET: reset above setting if not proper

4. SCREEN



```
H POS            185
V POS            41
H SIZE           1920
V SIZE           1080
```



The setting of <SCREEN> is based on the resolution of the LED screen, applicable under single picture mode. For example to display picture on a LED screen with resolution 1408x832, first of all, a resolution close to or bigger than 1408x832 shall be selected. In this case, 1440x900 or resolution above will be proper choice. The closer to the LED screen resolution, the better the display will be.

H SIZE:horizontal pixels, turn the knob or use the digital button to input 1408.

V SIZE:vertical pixels, turn the knob or use the digital button to input 832.


H POS:horizontal position, default 0, set the value as the way of H SIZE and V SIZE.

V POS:vertical position, default 0, set the value as the way of H SIZE and V SIZE.

MODE-- Mode option, select SCREEN SIZE.

RESET:If image quality distorts by improper operation, it can be recover by reset.



Note: Users can also set <SCREEN> by **【FS】** . Push FS button light on, Led display image in screen size, Push **【FS】** again, button light off, Led display image in full size.

5. **RATIO:** NORMAL, 16:9, 4:3

6. PICTURE

BRIGHTNESS	50
CONTRACT	55
RED	50
GREEN	50
BLUE	50
RESET	

You can adjust brightness,contact and color for picture.

7. TEXT OVERLAY

Text overlay function is to add subtitle on output image, more often used on such fields as live broadcasting, live concert, live commentary, and advertisement.

Before text overlay, the subtitle input channel need to be ensured, e.g subtitle input channel VGA

And the overlaid channel need to be decided, e.g overlay text on DVI channel.

Set as follows:

Push **【VGA】** to check VGA input, LCD shows the VGA input.

Push **【DVI】** to check DVI input, LCD shows the DVI input.

Push **【PIP】** , make sure VAG is the small picture and DVI the big picture,
if not, turn the <SWAP PICTURE> “ON” in **【PIP】** menu.

```
PIP                ON
LAYOUT            PIP L+B
>SWAP PICTURE    ON
ALPHA             0
```

Select <SELECT> in **【PIP】** menu, push knob turn Knob to select “IMAGE B”, Push <SCALE> to set the size and position of “IMAGE B” which the VGA picture in this case.

```
LAYOUT            PIP L+B
SWAP PICTURE    ON
ALPHA             0
>SELECT          IMAGE B
```

If there is black rim on top, bottom, left or right of the VGA picture, use <MASK TOP>,<MASK BOTTOM>,<MASK LEFT><MASK RIGHT> to crop the black rim.

```
>H SIZE          >>
V SIZE           >>
H POS            >>
V POS            >>
```

Push **【MENU】** ,select<OUTPUT>, push knob;

Select <TEXT OVERLAY>, push knob and enter <TEXT OVERLAY> menu as follows:

```
>TEXT OVERLAY    ON
PRESET           WhOnBk1
BLEND MODE       MODE1
BLEND LEVEL      12
```

Select <PRESET>Push knob and turn the knob to “WhOnBk1”or “WhOnBk2” and Push knob again

Note:TEXT OVERLAY only support monochrome subtitles.

```
>PRESET          WhOnBk1
BLEND MODE       MODE1
BLEND LEVEL      12
STAND            ABOVE
```

PRESET>User, WhONBk1 (white on black)

WhONBk2 (white on black),BkOnWh1(black on white),BkOnWh2(black on white),

GrnOnBk1 (green on black),GrnOnBk2

(green on black), GrnOnWh1 (green on white)1

GrnOnWh2(green on white),RedOnBk1 (red on black), RedOnBk2 (red on black), RedOnWh1 (red on white),

RedOnWh2(red on white)

BLEND MODE:MODE 1 or MODE2

BLEND LEVEL:0-15

STAND (standard):BELOW or ABOVE

AND/OR :choose “and” or “or”

RED, GREEN, BLUE: value from 0 to 255

8. DISPLAY MODE

>MODE	LIVE IMAGE
TEST PATTERN	>>
SOLID COLOR	>>

MODE: BLACK OUT, LIVE IMAGE, FREEZE IMAGE, SOLID COLOR, TEST PATTERN

TEST PATTERN	66
AUTO SWITCH	ON
HOR STEP	64
VER STEP	64

TEST PATTERN: Value 0-66

AUTO SWITCH: ON or OFF

HOR STEP: horizontal color graduation value 0-64

VER STEP: vertical color graduation value 0-64

COLOR: WHITE, BLUE, GREEN, RED.

SOLID COLOR

COLOR	
RED	255
GREEN	255
BLUE	255

RED, GREEN, BLUE: value 0-255

8.GAMMA: LINEAR, sRGB, -1.2, 1.2, -1.4, 1.4, -1.6, 1.6

3.3.4 Transition

Transition is used to set the switching mode between different input sources.

>MODE	FADE
DURATION	0.5S
ALPHA	16
DEINTERLACE	ON

IMAGE ENHANCE	OFF
>TAKE	ON

MODE: Special effects switching modes, including FADE, CUT, WIPE SQUARE IN, WIPE SQUARE OUT, WIPE TOP LIEFT IN, WIPE TOP LIEFT OUT, WIPE TOP RIGHT IN, WIPE TOP RIGHT OUT, WIPE BOTTOM LEFT IN, WIPE BOTTOM LEFT OUT, WIPE BOTTOM RIGHT IN, WIPE BOTTOM LEFT OUT, WIPE LEFT IN, WIPE LEFT OUT, WIPE RIGHT IN, WIPE RIGHT OUT, WIPE TOP IN, WIPE TOP OUT, WIPE BOTTOM IN and WIPE BOTTOM OUT

DURATION:set the transition time ranging from 0.0 to 1.0 S

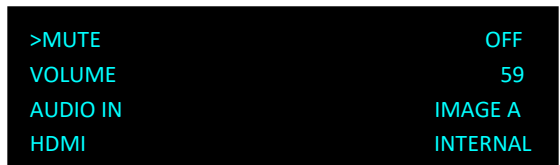
ALPHA:set the image transparency ranging from 0 to 16

DEINTERLACE:select ON or OFF to enable or shut down the deinterlacing function

IMAGE ENHANCE:image enhancement function, for image edge sharpening, color reduction and image scaling.

TAKE: Select ON or keep pressing 【 TAKE 】 button 3s to enable the function. The selected input signal will be switched to output as the TRANSITION set.

3.3.5 Audio



MUTE:select ON or OFF

Volume:adjustment range from 0 to 100

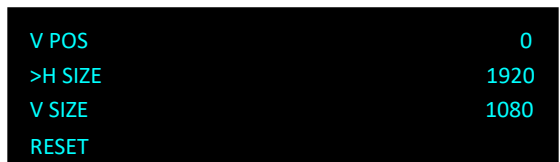
Users can also adjust volume without entering AUDIO menu. Rotate the knob anytime the LCD screen shows the main interface.

AUDIO IN:select the source of the input audio from IMAGE A or IMAGE B

HDMI:select internal or external audio for HMDI input

3.3.6 Split

GX4 can be used in multiple cascade mode to finish split. When do cascade, connect the signals to the signal distributor first, and then connect from the outputs of the signal distributor to each input of GX4. User can also do cascade via HDMI LOOP port.



H TOTAL:set the total horizontal pixels of the LED screen, maximum 65535

V TOTAL:set the total vertical pixels of the LED screen, maximum 65535

H POS: select the total number of horizontal screens

V POS: select the total number of vertical screens

H SIZE:set the horizontal pixels this device will provide, maximum 4096

V SIZE: set the vertical pixels this device will provide, maximum 4096

Reset: If image quality distorts by improper operation, it can be recover by reset.

When doing equal splitting, set H SIZE and V SIZE of each device with same resolution, and then set H POS and V POS of each device correspondingly. When doing unequal splitting, set and save H SIZE and V SIZE of each device according to actual needs.

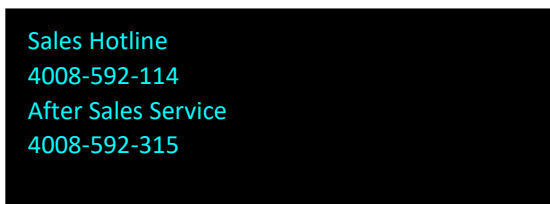
3.3.7 System

1. SYSTEM INFO

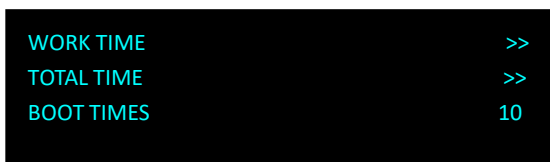


Show flowing information MCU VERSION,
VIDEO VERSION, EXT VERSION, SN

2. TECH SUPPORT



3. WORK TIME



WORK TIME: the consistent working time since
Latest boot up.

TOTLAL TIME: the accumulative working time since
the first boot up.

BOOT TIMES: the total boot up times up to now.

4. LOCK FRONT PANEL

YES <OK>, NO <MENU>

After the panel is locked, keep pressing MENU for 3 S to release the panel.

5. LICENSE SET UP

ENETER PASSWORD 090721 and set new password for other users.

6. HOT BACKUP

Hot Backup	ON
Backup_1	VGA
Backup_2	DVI
Backup_3	CVBS
Backup_4	HDMI
Backup_5	OFF

HOT BACKUP: ON or OFF

HOT BACKUP_1,2,3,4,5,

Chose Hot Backup On and choose one input source for the each backup. Up to 5 backups can be set

7. DELAY RECALL

Value range from 0 to 255S

3.3.8 Language

To switch langue here. English or Chinese available.

Or Keep pressing MENU and SCALE button for 3 S to switch language.

3.3.9 Factory Reset


FACTORY RESET
YES <OK>, NO <MENU>

3.4 Shortcut Buttons


GX4 comes with shortcut buttons to enter the sub-menu of certain features. Here are details of some quick buttons.

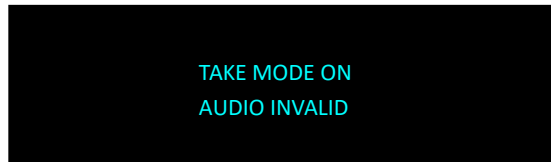
3.4.1 【TAKE】 Button


When GX4 power on, system default HDMI input signal.

To switch signal, press CVBS,VGA,DVI or SDI. For example, to switch to CVBS, push 【VGA】  button and the button flashes.

TAKE MODE allow users to switch inputs with transition effect

To Enable TAKE mode , Keep pressing  button for 3s and the TAKE MODE is ON.
The LCD screen shows the info below for 2S




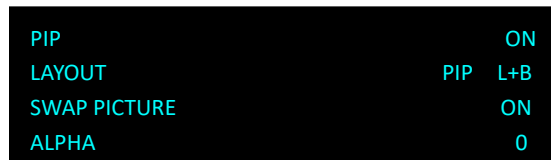
And then go back to the main interface .If user want to switch to DVI signal, push 【DVI】  button

Then push TAKE button again. VGA signal will be switched to LED screen with set transition effect.

3.4.2 【PIP】 Button

PIP mode can't be enabled unless TAKE MODE is OFF.

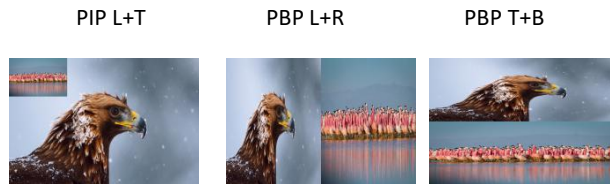
Push  button and button light is on. LCD shows the <PIP> menu.



LAYOUT:

There are 7 layouts available in the menu. PIP L+T, PIP R+T, PIP L+B, PIP R+B, PIP CENTER, PBP L+R and PBP T+B.

Here are 3 examples:



SWAP IMAGE:

Select on or off to switch the main picture and secondary picture (the small one).

ALPHA:

Image transparency setting, the adjustment range is 0 to 16.

SECLECT:

Select IMAGE A or IMAGE B.

3.4.3 【SCALE】 Button

To scale the output image, users can press 【SCALE】  button and set the parameters by turning knob or pressing numeral buttons.

After user press 【SCALE】 , LCD shows the menu items as follows:

H SIZE	1920
V SIZE	1080
H POS	0
V POS	0

H SIZE: set the horizontal pixels of output image

V SIZE: set the vertical pixels of output image

H POS: set the horizontal position of image


V POS: set the horizontal position of image

RESET: If operation is not proper, turn knob to <RESET> and start over.

3.4.4 【SAVE】 Button

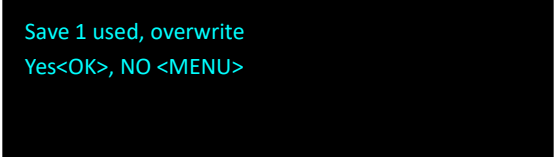
Push the [SAVE] button, the button light is on, and enable the SAVE function.

LCD shows [SAVE] instruction info to assist users complete operation. Meanwhile, part of numeral buttons 0~9 lights are on and parts flash.. Buttons with lights on are empty, flashing buttons are used. LCD shows as below



```
SAVE TO
>SAVE1
KEY ON FOR EMPTY
FLASH IS FOR USED
```

Saving to flashing positions will overwrite previously saved settings. For example, button 1 is flashing, after pressing button 1, LCD shows



```
Save 1 used, overwrite
Yes<OK>, NO <MENU>
```

Push knob to confirm, **【MENU】** to cancel.

Up to 10 groups of SAVE can be done from SAVE1 to SAVE 10

3.4.5 **【LOAD】** Button

Push **【LOAD】** LCD shows the instruction information to assist users complete LOAD operation.

Meanwhile, among numeral buttons 0-9, some buttons lights are on, some flash and perhaps some lights go off.

Buttons with light on indicate the <SAVE> ready to load, flash indicate the <SAVE> is currently loaded, light off indicate no <SAVE>

to load. For example button 1 light is on, press button 1 to load <SAVE1>

LCD shows below:



```
LOAD FROM
>SAVE1 FINISHED!
KEY ON FOR ALL SAVES FLASH IS CURRENT SET
```

Push **【MENU】** to exit LOAD, the button lights go out.

Chapter 4 ORDERING CODES

4.1 PRODUCT

820-1004-02-0 GX4

4.2 OPTIONS

4.2.1 Input Options

190-0001-04-2	Single DVI Input Module
190-0001-13-2	Single HDMI Input Module
790-0004-01-0	Single HDMI Input/Loop Module
190-0001-07-2	Single 3G SDI Input/Loop Module
190-0001-10-2	Single USB Input/Backup Module
190-0001-15-2	Single HDBaseT Input Module
790-1001-28-0	Subito Quatro Sender Module
880-0033-01-0	SubitoNX Quatro Sender Module

Chapter 5 Support

5.1 Contact Us

www.rgblink.com



Inquiries

☎ +86-592-577-1197
✉ info@rgblink.com
🌐 rgblink.com/contact-us

Global Support

✉ support@rgblink.com
🌐 rgblink.com/support-me



@RGLINK



/rgblink



+rgblink



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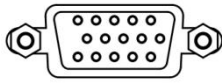
rgblink

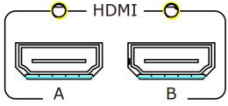
RGBlink Headquarters Xiamen, China 6 th Floor Weiye Building Torch Park Hi Tech Zone Huli ✉ sales@rgblink.com ☎ +86-592-577-1197	China Regional Sales & Support Shenzhen, China 11 th Floor Baiwang Building 5318 Shahe West Road Baimang, Nanshan ☎ +86-755-2153-5149	Beijing Region Office Beijing, China Building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

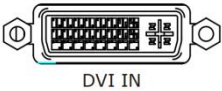
Chapter 6 APPENDIX

6.1 Specification

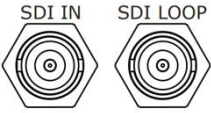
CVBS Input (Standard)	
Number of Inputs	1
Connector	BNC
Interface Appearance	 CVBS IN
Supported Standard	PAL/NTSC
Signal Level	1Vpp±3db (0.7V Video+0.3v Sync) 75 ohm
Supported Resolution	480i 576i

VGA Input (Standard)	
Number of Inputs	1
Connector	DB15
Supported Standard	VGA-UXGA
Interface Appearance	 VGA IN
Supported Resolution	VESA 800×600@60 1024×768@60 1280×1024@60 1440×900@60 1600×1200@60

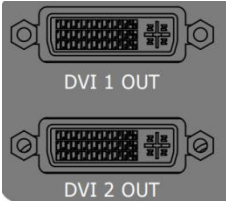
HDMI Input (Standard)	
Number of Connectors	2 (1 IN 1 LOOP)
Connector	HDMI-A
Interface Appearance	
Supported Resolution	SMPTE 625/25/50 PAL, 525/29.97/59.94 NTSC, 720p50/59.94/60 1080i50/59.94/60 1080P50/59.94/60 VESA 800×600@60 1024×768@60 1280×768@60 1280×1024@60 1600×1200@60 1920×1080@60
Signal Level	TMDS pwl, single pixel input, 165MHz bandpixels
Supported Standard	HDMI 1.3

DVI Input (Standard)	
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 DVI

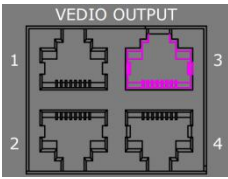
3G-SDI Input (Standard)	
Number of Connectors	2 (1 IN 1 LOOP)
Connector	BNC

Interface Appearance	
Data Rate	2.97Gb/s 2.97/1.001Gb/s 1.485Gb/s 1.485/1.001Gb/s 270Mb/s
Supported Resolution	SMPTE 480i NTSC, 576i PAL, 720p50/59.94/60 1080i50/59.94/60 1080p50/59.94/60
Supported Standard	SMPTE 425M (Level A & B) SMPTE 424M SMPTE 292M SMPTE 259M-C DVB-ASI

HDBaseT Input (Optional)	
Number of Connectors	1
Connector	RJ45
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

DVI Output (Standard)	
Number of Outputs	2
Connector	DVI-I
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 1280×720@23.98 1280×720@24 1280×720@25 1280×720@29.97 1280×720@30 1920×1080@23.98 1920×1080@24 1920×1080@25 1920×1080@29.97 1920×1080@30 VESA 800×600@60 1024×768@60 1024×768@75 1280×720@60 1280×720@50 1280×768@60 1280×800@60 1280×1024@60 1360×768@60 1366×768@60 1400×1050@60 1440×900@60 1600×1200@60 1680×1050@60 1920×1080@60 1920×1080@50 1920×1200@60 2048×1152@60 2560×812@60 2560×816@60

Subito Quatro Sender Module (Optional)	
Number of	4

Outputs		
Connector	RJ45	
Interface Appearance		
Performance	Each Port	
	Capacity	655,360 pixels
	Horizontal Range	3840 pixels
	Vertical Range	2048 pixels

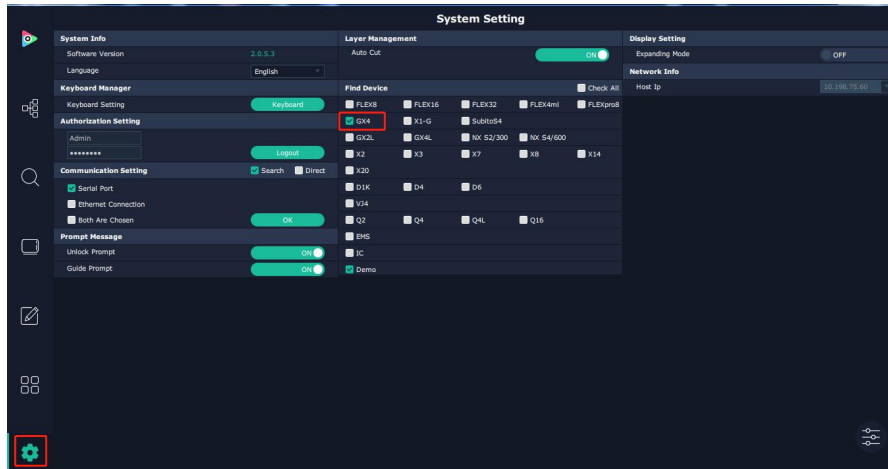
Features	
Grey Processing	10 bit
Frame Rate Delay	2
EDID Management	Yes


Accessories and Operating Condition	
Communication	RJ11/RS232 USB 2.0
Input Voltage	AC100-240V/50-60HZ
Max Power	25W
Working Temperature	0°C~45°C
Working Humidity	10%~85%
Warranty	3 Years

6.2 Load LED Configuration File

You can load LED configuration file from XPOSE software. Install the software in your control computer firstly.

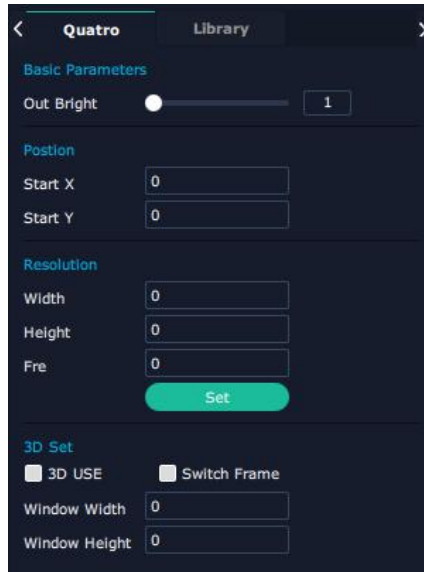
1. Click and select “GX4”



2. Click the icon  and tick GX4 in <All Devices> and <Chosen Devices>, the rear panel of GX4 can be seen in the interface.



3. Click the LAN port to adjust the parameters.
Out Bright 0~255
Set position, resolution and 3D



Library:There are 3 kinds of method to adjust the screen parameters

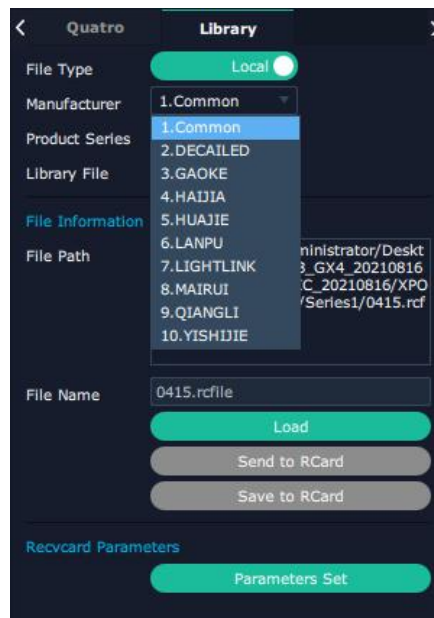
Method 1:Select the saved files In XPOSE.

File Type:select **Local**;

Product Series/Library File:select according to your needs

Click “Load”,and the file will be imported into the software.

Click “Send to RCard” to view the real-time change in LED screen;click “Save to RCard”to ensure the data without loss.



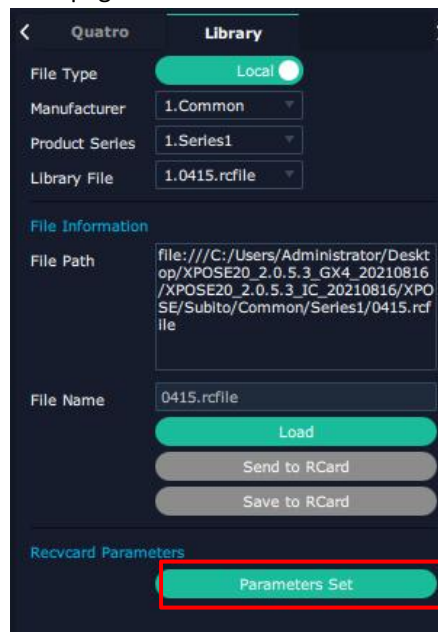
Method 2:Import the file from manufacture to XPOSE.

File Type:select **Customize**

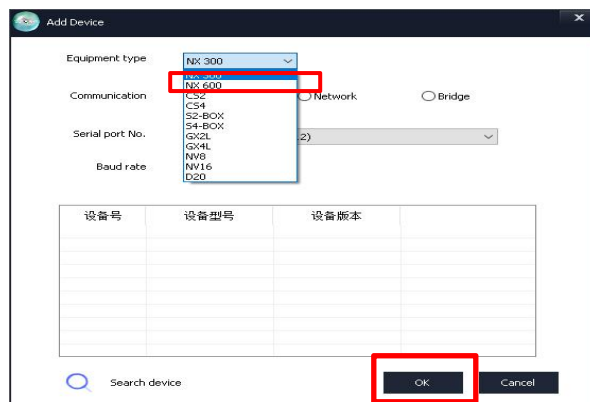
Click “Choose File” ,select the file from your computer and then click“Load” to import.



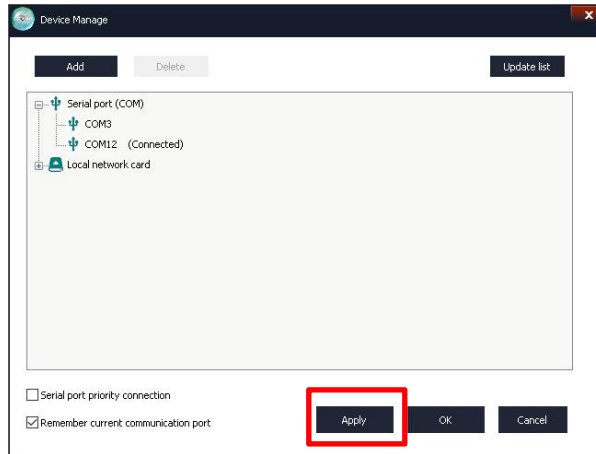
Method 3 : If the saved files could not meet your needs, you can click “Parameter Set” to adjust the parameters. Click <Parameters Set> to open adjustment page




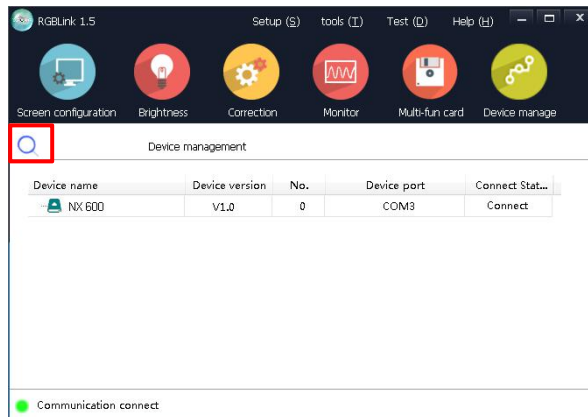
1. Click “Device manage”-- “Add device”, select NX 600, and click “OK”.



Select the Serial Port to connect, and click “Apply”.

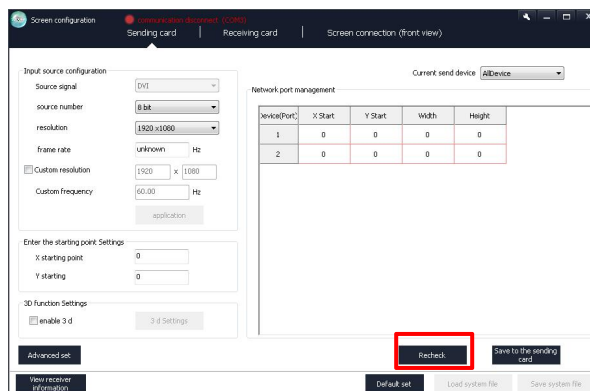


please click  to connect the device .



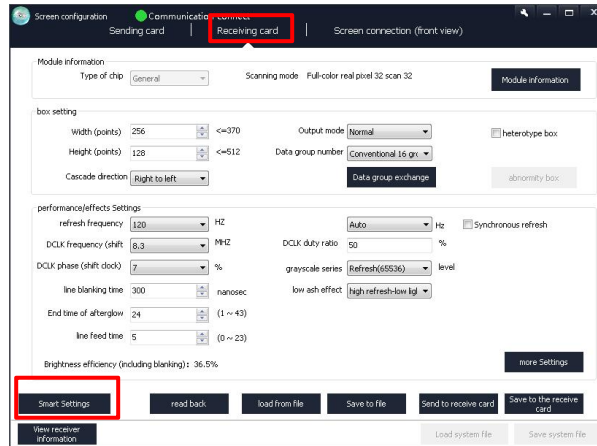
2. Click “Screen Configuration” to enter Sending Card interface.

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

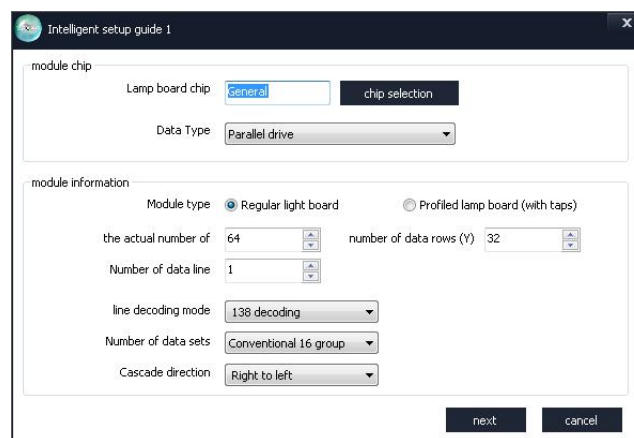
Number of data rows:the height of single module

Number of data line:It can be viewed according to the number of RGB groups defined by the module interface.

Line decoding mode:138 decoding,etc

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

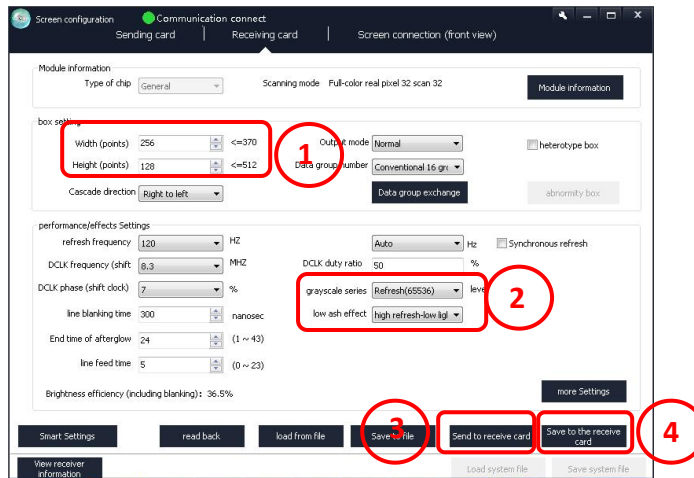
Cascade direction:Left to right/Right to left/Top to bottom/Bottom to top




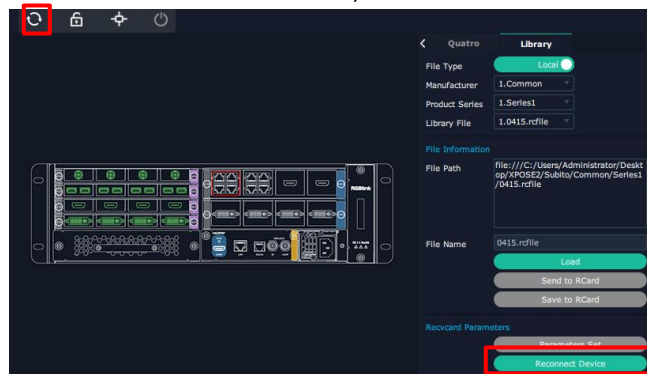
6. Users can remove the √ of “state changes automatically”, and click 1/2/3/4 to change the display state according to the observation of the LED screen.

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”

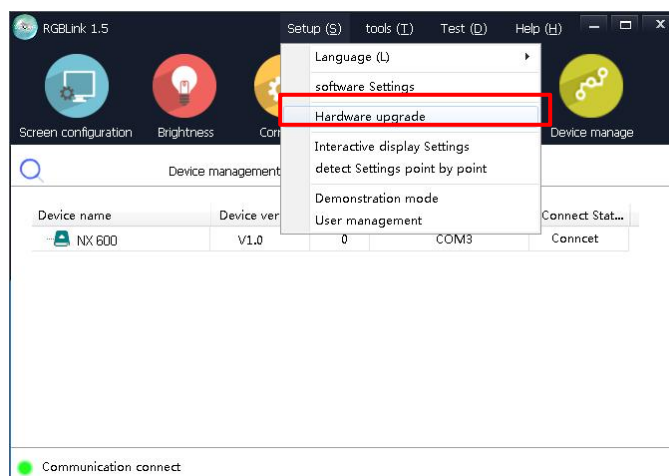


Note: If you want adjust the second send card after setting the first one,close the adjust software firstly,and click  to refresh and click"Reconnect Device".After that,click "Parameter Set"to set the second send card.



Upgrade

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

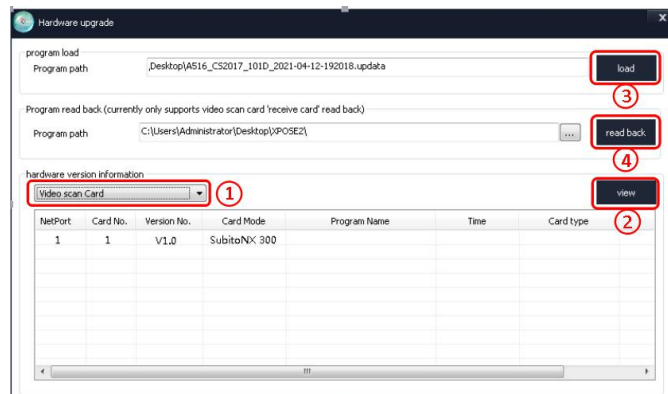


2. Type in password "admin" or 168.



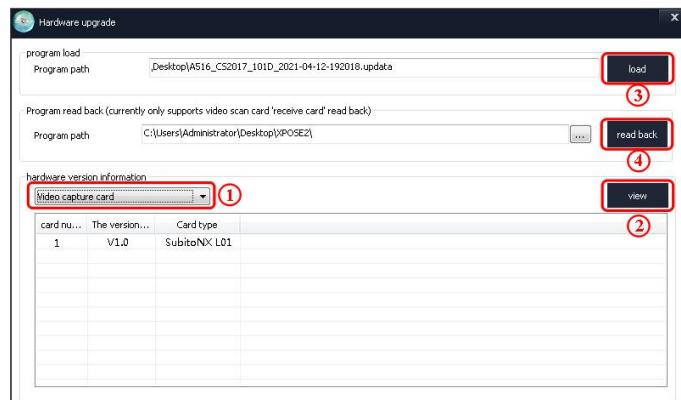
Send Card Upgrade:

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



Receive Card Upgrade:

- 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



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.










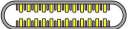
- **USB:** Universal Serial Bus is a standard that was developed in the mid-1990s that defines cables, connectors and communication protocols. This technology is designed to allow a connection, communication and power supply for peripheral devices and computers.

- **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-horizontal images (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 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 and 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 electronic 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.

Version	Time	ECO#	Description	Editor
V1.0	20190614	0000	Release	Fanny
V1.1	20190813	0001	Add " Load Led configuration File	Fanny
V1.2	20200324	0002	Revise Front Panel, Back Panel MENU interface	Fanny
V1.3	20200428	0003	Back panel Order code (add subito quatro sender module)	Fanny
V1.4	20210818	0004	Update LED configuration file	Sylvia

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