X1 Gen2



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 X1 Gen2 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 X1 Gen2 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:

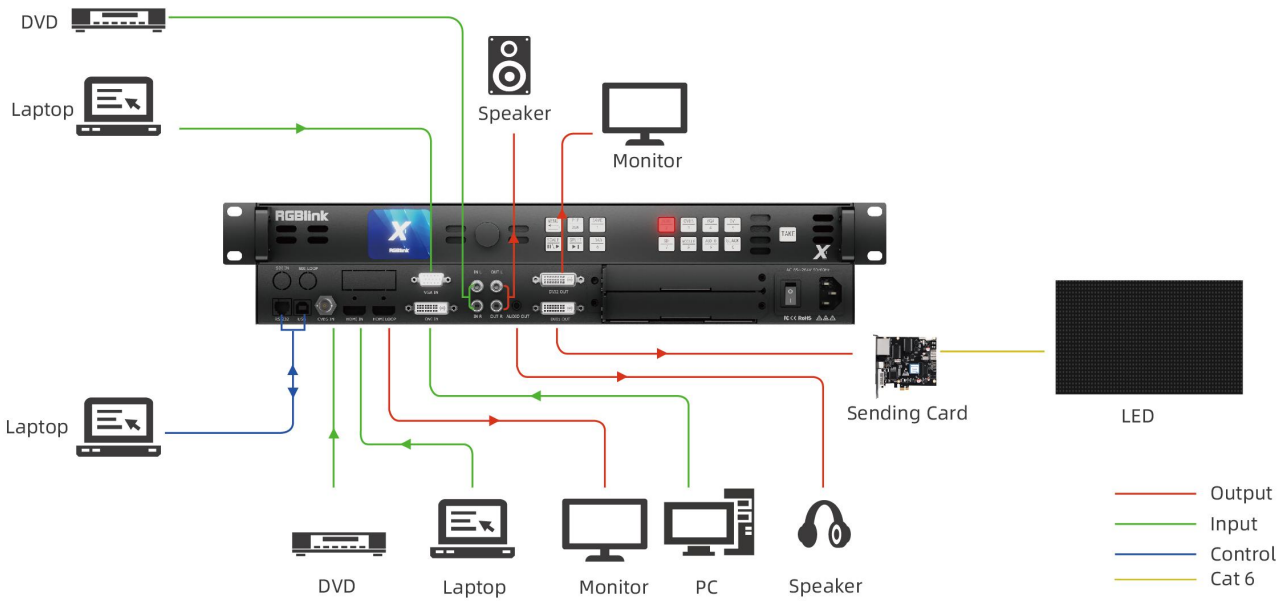
AC Power Cable supplied as standard according to destination market.

1.2 Product Overview

After 7 years, X1 iteration happens and Gen2 is released, refine and enhance based on market feedback and trends.

As a leading broadcast video processor, X1 solids its DVI output resolution up to 2048×1152@60 and customized resolution capacity. And it offers an optional SDI module to meet studio and rental requirement, also extends its broadcast ability to multiple test pattern build in, seamless switching between inputs, auto detection for VESA and SMPTE input standard, audio embedded and de-embedder.

X1 is dedicated for LED display processor and compatible with common LED control system, including Novastar, Colorlight, Linsn, Mooncell and RGBlink.

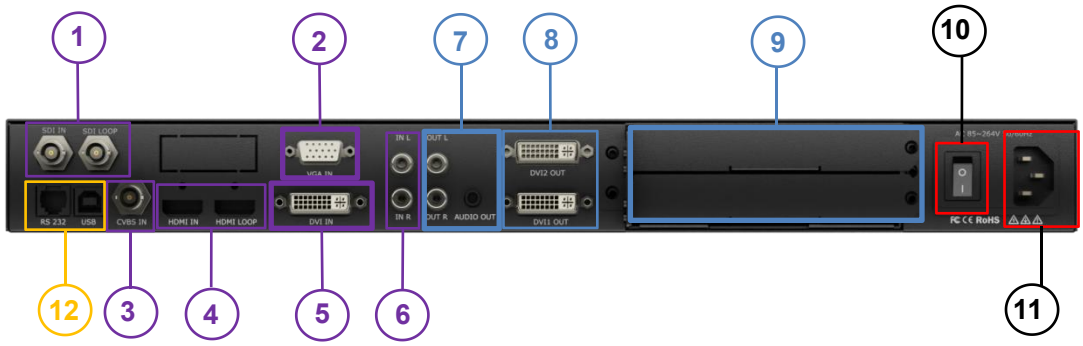


X1 Gen2 with SubitoNX Quatro Module

Note:X1 Gen2 is also compatible with sender cards from Novastar,Linsn Technology,Colorlight and Mooncell.But X1 Gen2 only supports power supply to the sender cards from other companies and can not control them.

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1.2.1 Rear Panel



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

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1.2.2 Front Panel



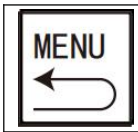
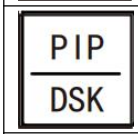
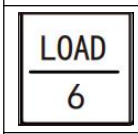
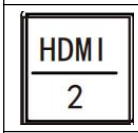
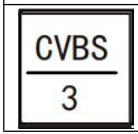
OLED Display

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

Rotary Knob

	This knob used for menu selections and confirmation. turn to left and right to select menu item and push to confirm selection.

Buttons

	This button used for menu selections Push the button again will return to the last level menu or exit the menu.
	**PIP/DSK Button** PIP and DSK function reuse button. Push the button to enter to the PIP menu items.
	Save all current settings to 1 -16 scene and Number 1.
	This button used for size and position adjusting.
	Split function button.
	Restores/Loads saved setting from 1-16 scene and Number 6.
	HDMI input source selection and Number 2
	CVBS input source selection and Number 3

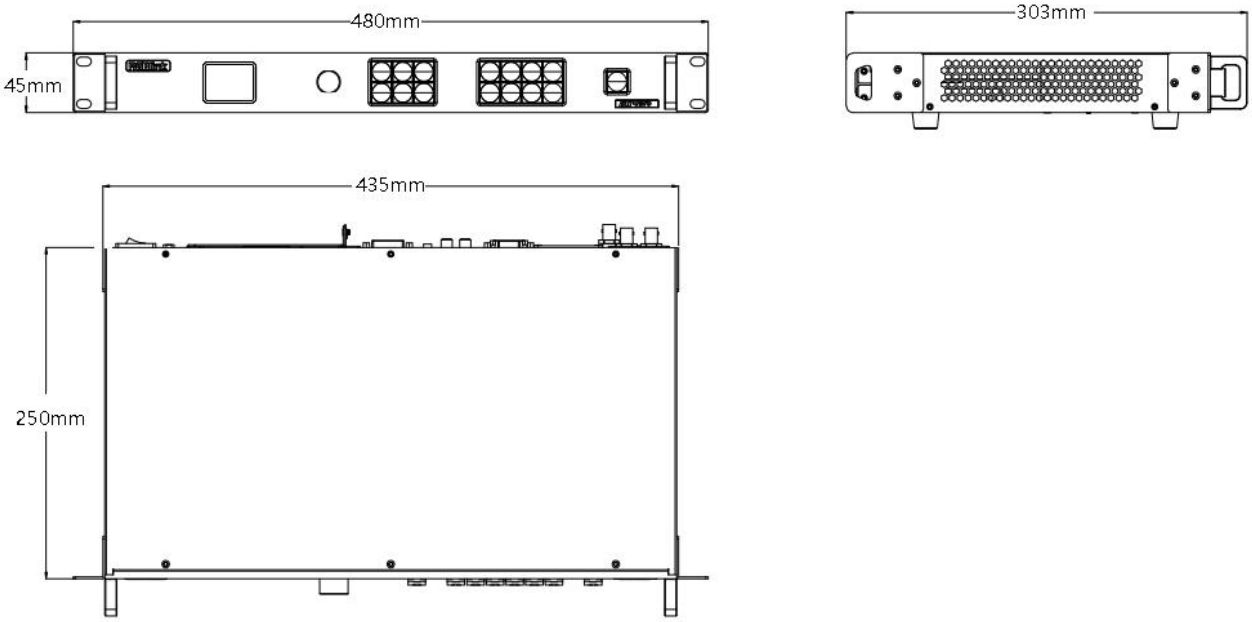
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VGA 4	VGA input source selection and Number 4.
DVI 5	CVBS input source selection and Number 5.
SDI 7	SDI input source selection and Number 7.
MODULE 8	After optional input module is fitted, this button is to select the optional input source. Number 8.
AUDIO 9	Short cut button of Audio Menu and Number 9
BLACK 0	Short cut button of Black Out and Number 0.
TAKE	Switch button with transition effect.

1.2.3 Dimension

Following is the dimension of X1 Gen2 for your reference:

Dimension:480mm×303mm×45mm



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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.

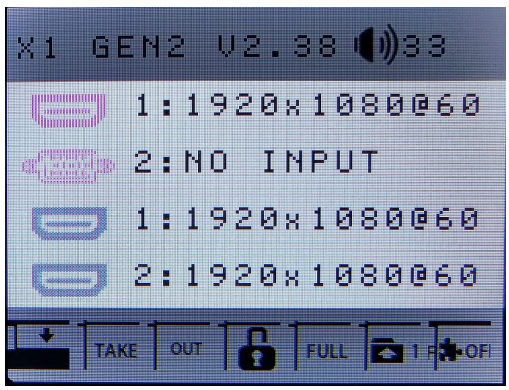
2.2 Plug in Main Power

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.



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Chapter 3 Use Your Product

3.1 Use the MENU Button

Push【MENU】button to enter main menu.

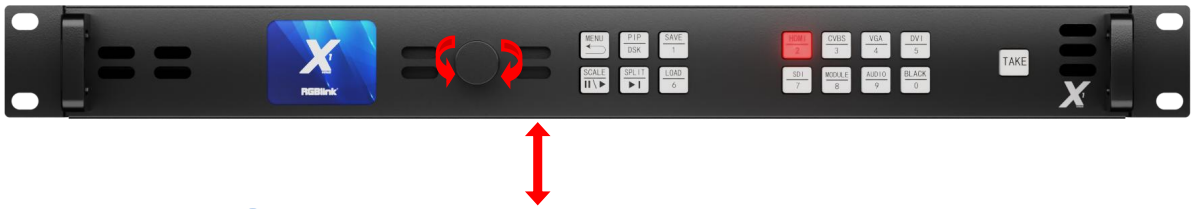
Turn the knob to select corresponding menu item.

The symbol >indicate that the item is selected.

Push the knob to confirm the operation.

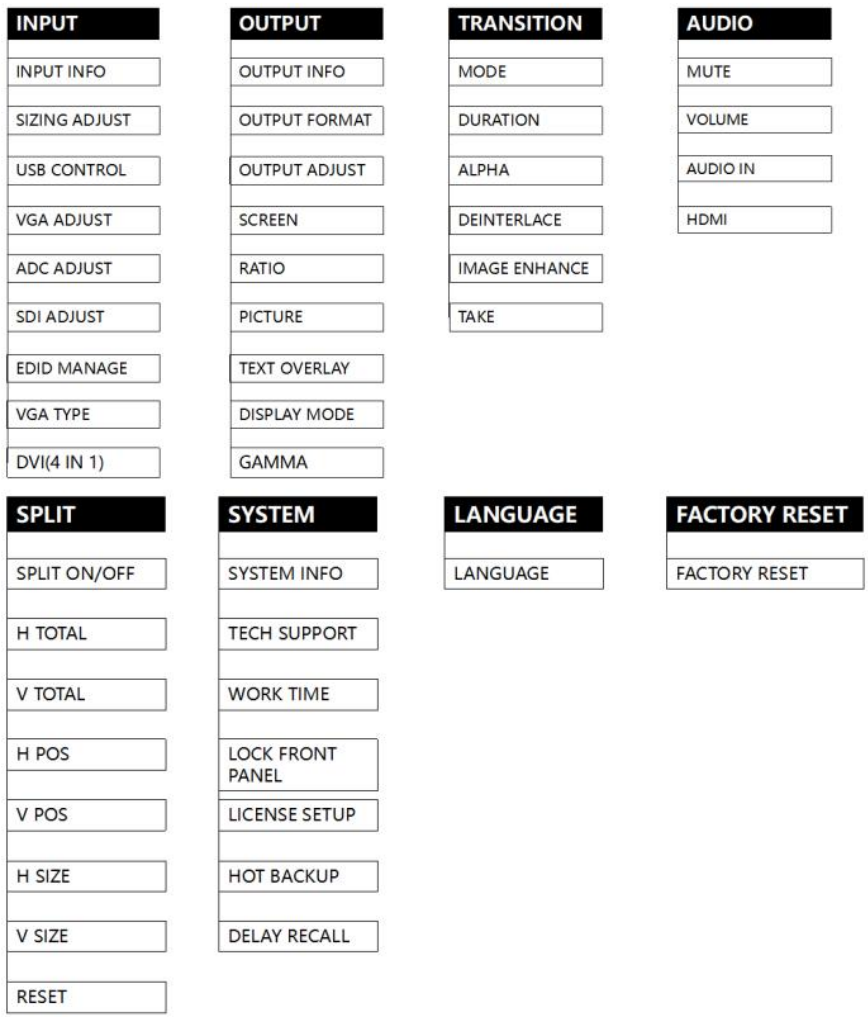
The symbol＊ means the selected item is under editing state, ready to be set or checked

The operation diagram is as follows:



3.2 MENU Structure

The MENU structure is shown in the figure below:



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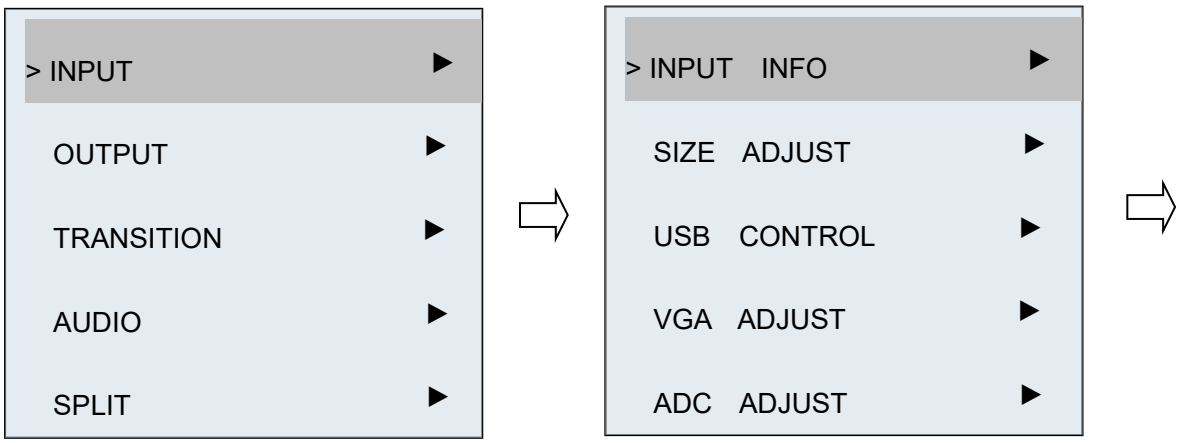
3.3 Use the Menu

Use the menu system for convenient and intuitive operation. X1 Gen2 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.

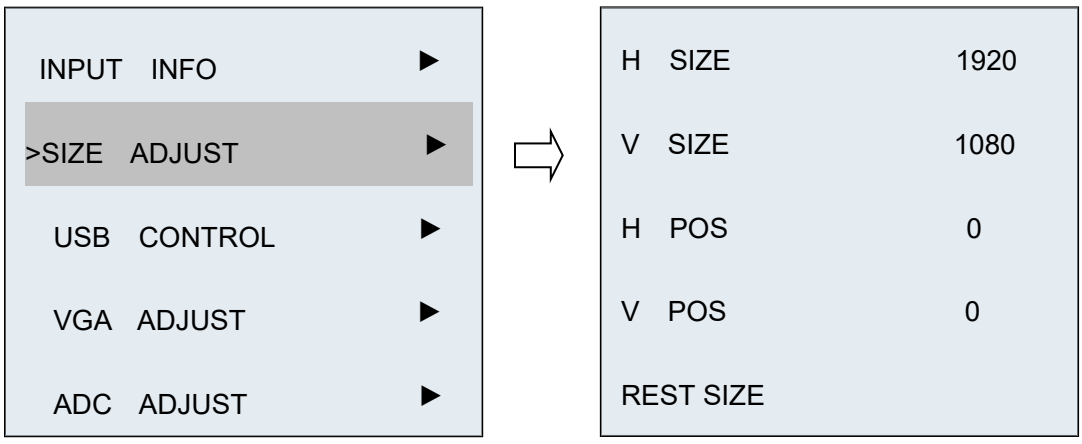
3.3.1 Input

1. INPUT INFO

Show the current input format and resolution



2. SIZING ADJUST



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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	0
MASK BOTTOM	0
MASK LEFT	0
MASK RIGHT	0
RESET MASK	0

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.

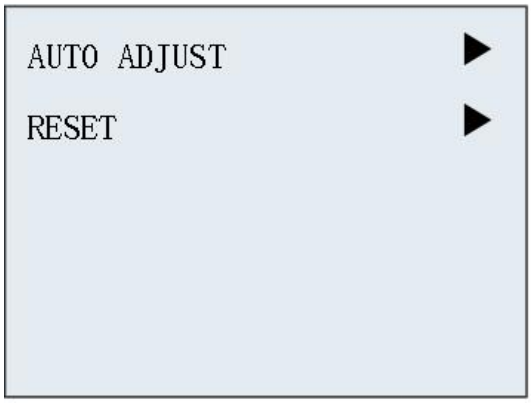
3. VGA ADJUST

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 ADUST: YES <OK>,NO <MENU>
RESET: YES <OK>,NO <MENU>

5. SDI ADJUT

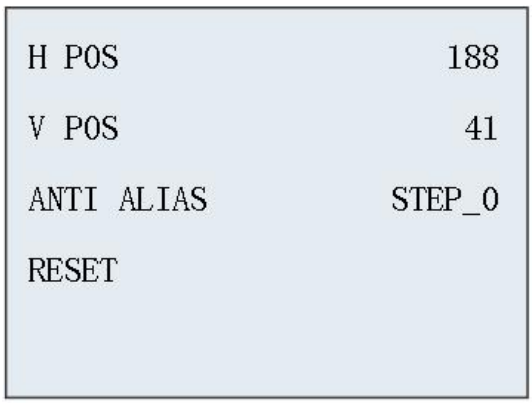
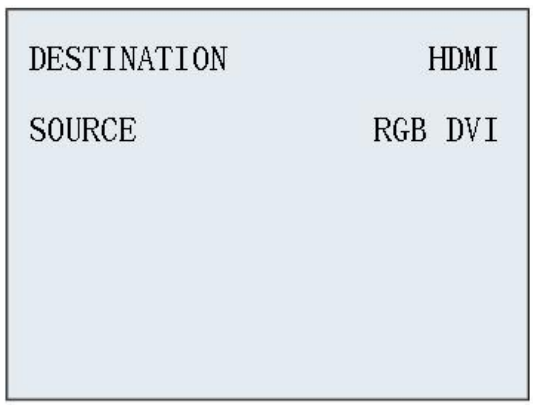


Image Control One with SDI optional module come with SDI ADJUST in the menu.

6. EDID MANAGE



DESTINATION: DVI or HDMI
SOURCE: RGB DVI, RGB HDMI, FOLLOW, CUSTOM

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CUSTOM EDID

Customize resolution for EDID

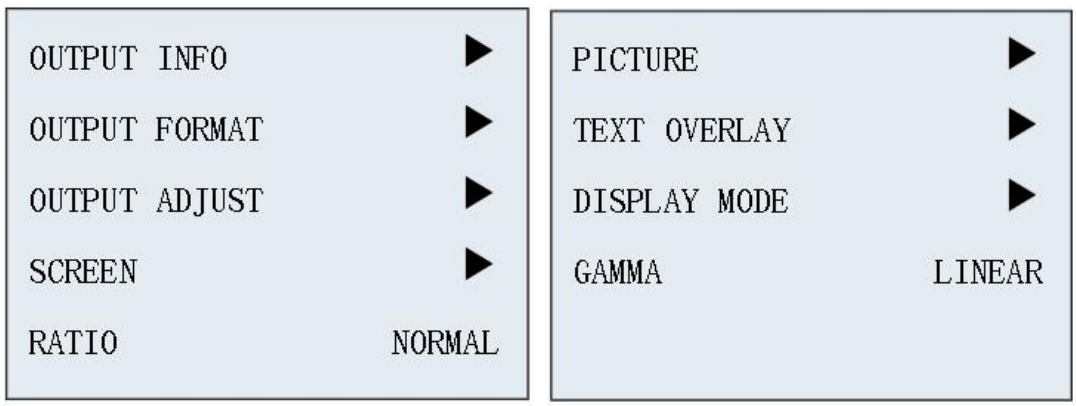
7. VGA TYPE

Choose signal type for VGA button. VGA or YPbPr.

8. DVI(4 In 1)

Image Control One 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.

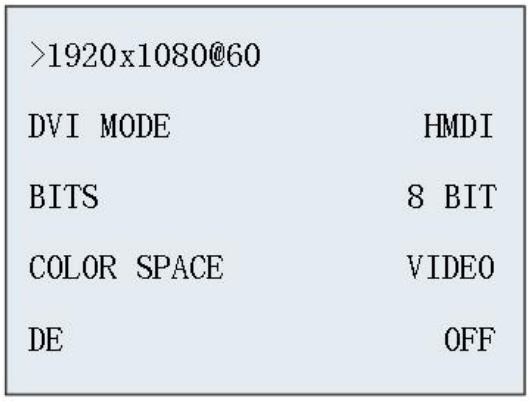
3.3.4 Output

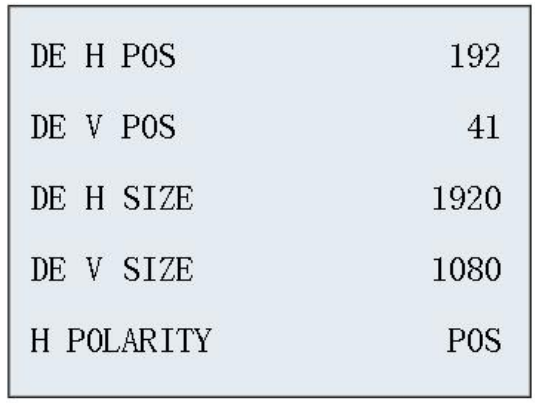


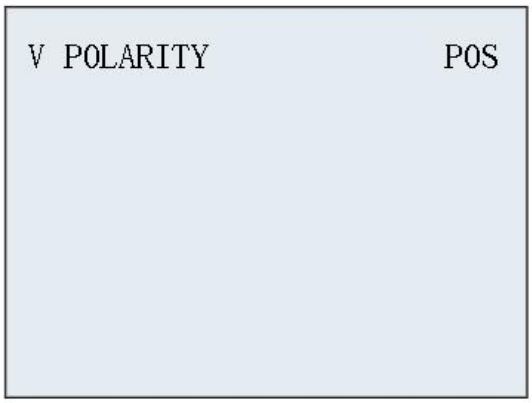
1. OUTPUT INFO

show current input information

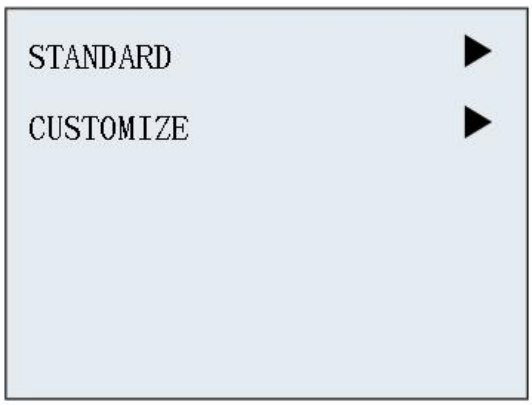
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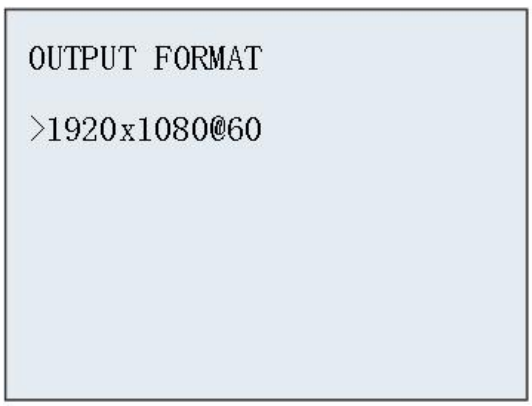


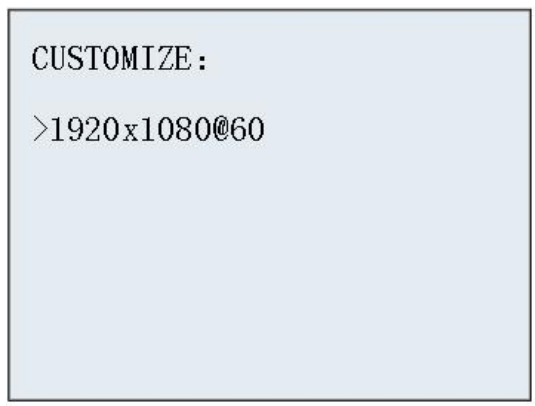
2. OUTPUT FORMAT



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

CUSTOMIZE: custom resolution





Turn the knob to resolution line and press the knob “>” (arrow)change to “*” (star) put in the numbers for

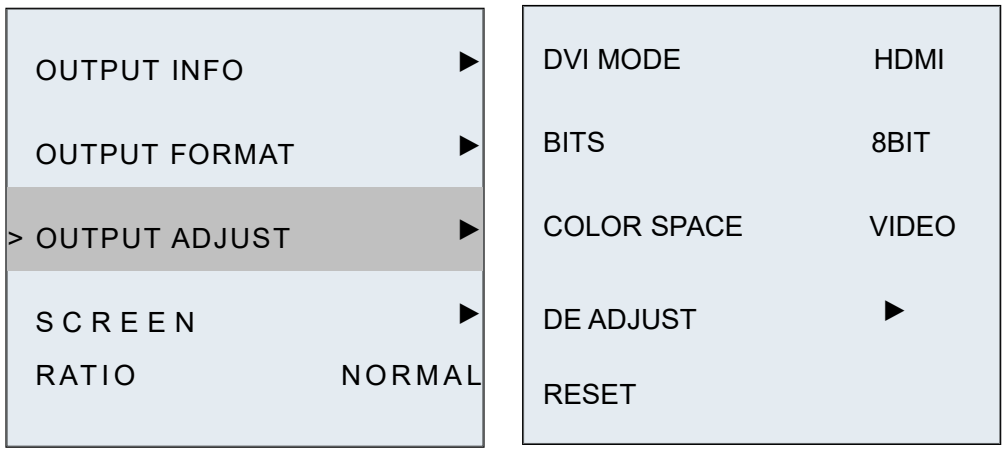
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width, then press the knob to confirm the number.

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

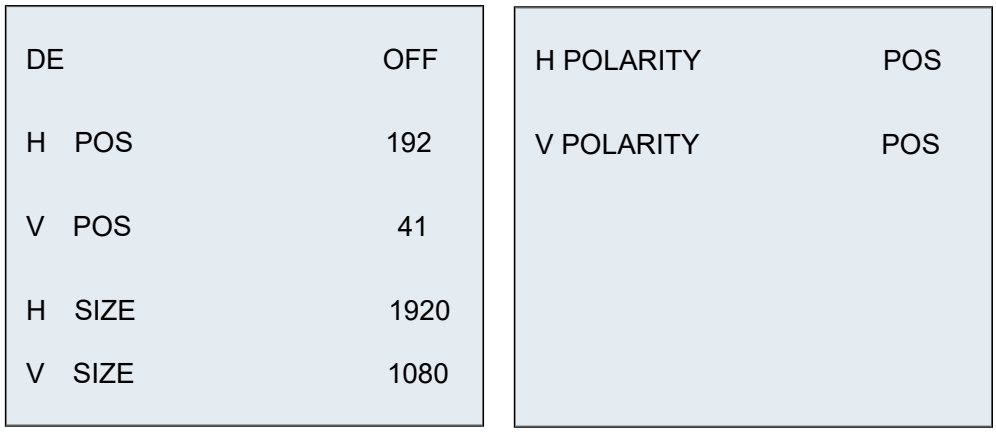


DVI MODE: DIV or HDMI

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

COLOR SPACE: IMAGE or VIDEO

DE ADJUST



DE: ON or OFF

H POS: horizontal position, value from 0 to 1920

V POS: vertical position, value form 0 to 1080

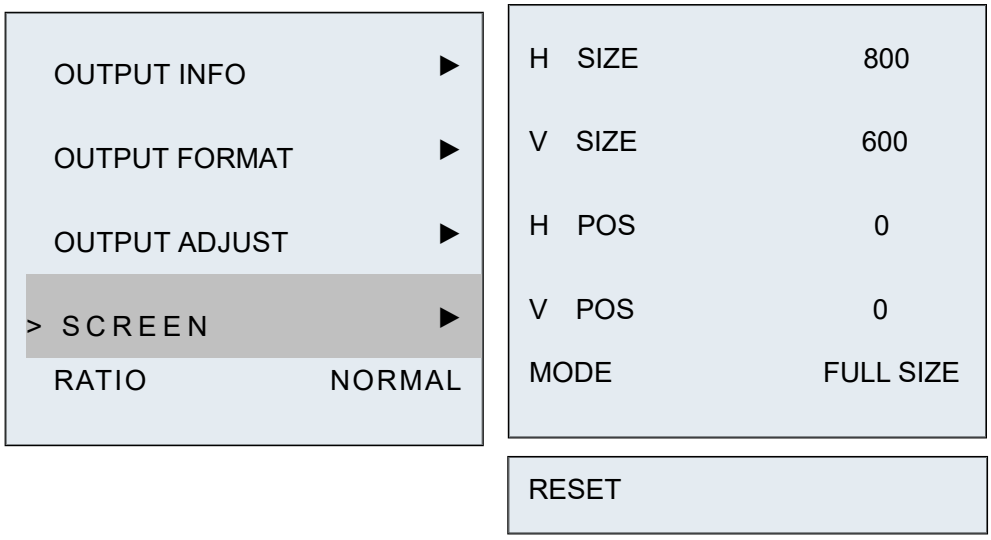
H POLARITY:horizontal polarity, POS (positive) or NEG (negative)

V POLARITY:vertical polarity,

POS (positive) or NEG (negative)

RESET: reset above setting if not proper

4. SCREEN



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.

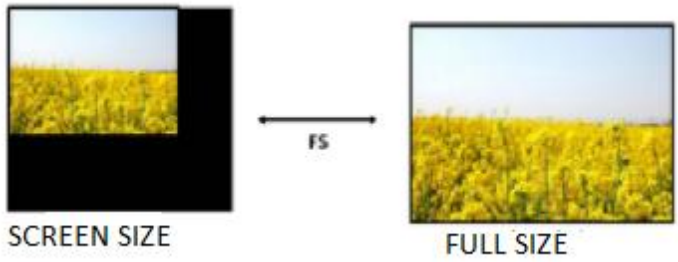
V SIZE:vertical pixels, turn the knob or use the digital button to input 832.

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.

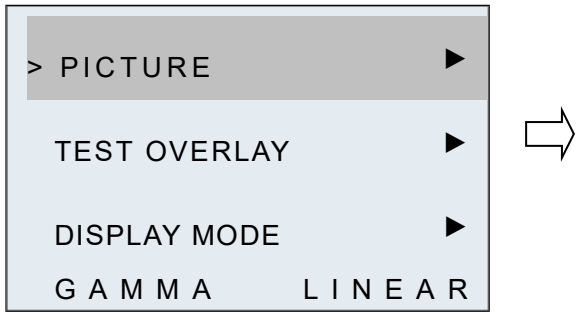
RESET:If image quality distorts by improper operation, it can be recover by reset.



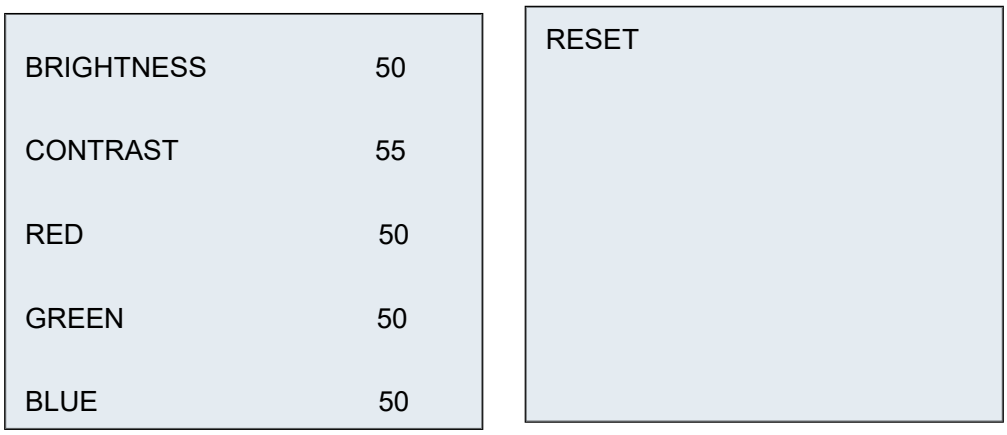
5. RATIO

NORMAL, 16:9, 4:3

6. PICTURE



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Adjust the brightness,contrast 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 overlayed channel need to be decided, e.g overlay text on DVI channel.

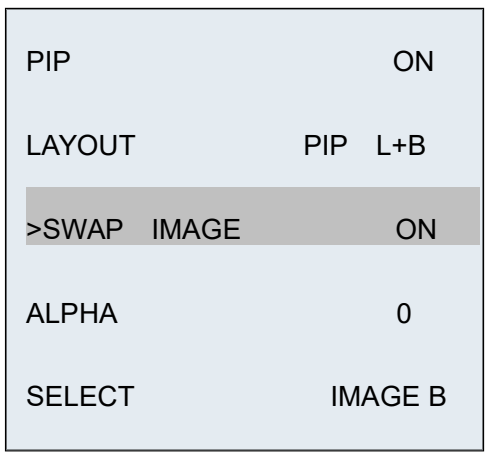
Set as follows:

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

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

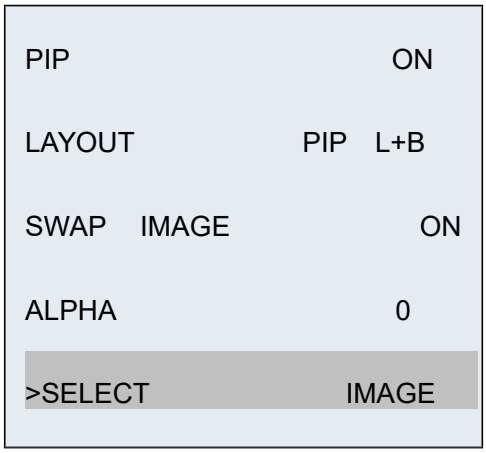
Push 【PIP】, make sure VGA is the small picture and DVI the big picture,

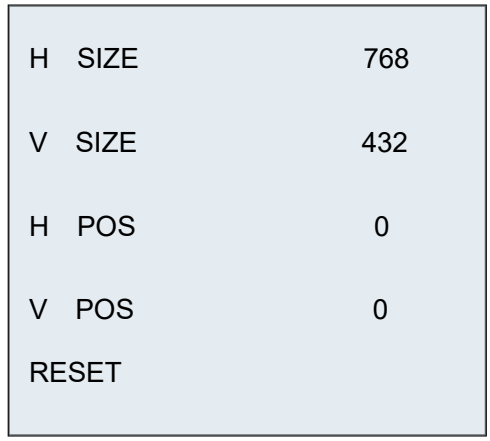
if not, turn the <SWAP IMAGE> "ON" in 【PIP】menu.



Select <SELECT> in 【PIP】menu, push knob turn Knob to select"IMAGE B", Push <SCALE> to set the size and

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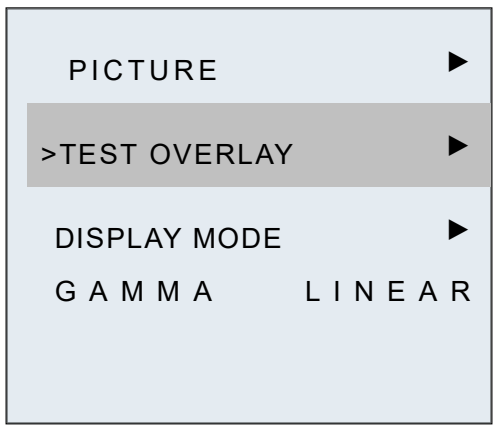


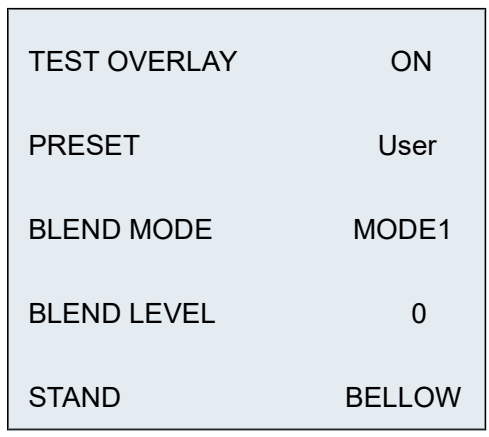
position of ”IMAGE B” which the VGA picture in this case.

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.

Push【MENU】,select<OUTPUT>, push knob;

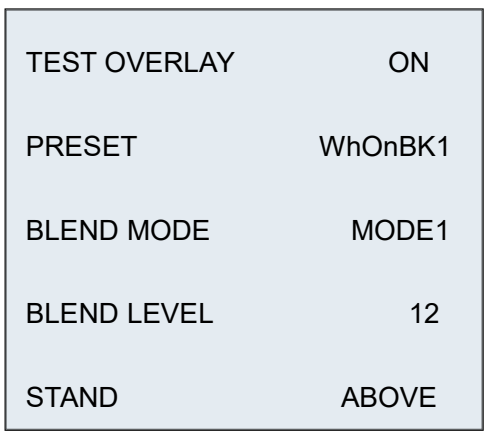
Select <TEXT OVERLAY>, push knob and enter <TEXT OVERLAY> menu as follows:

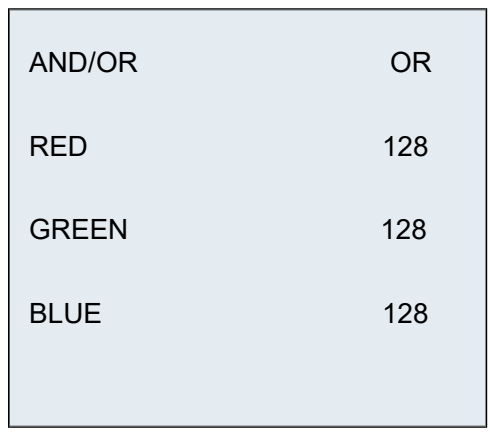




Select <PRESET>Push knob and turn the knob to“WhOnBk1”or “WhOnBk2” and Push knob again

Note:TEXT OVERLAY only support monochrome subtitles.



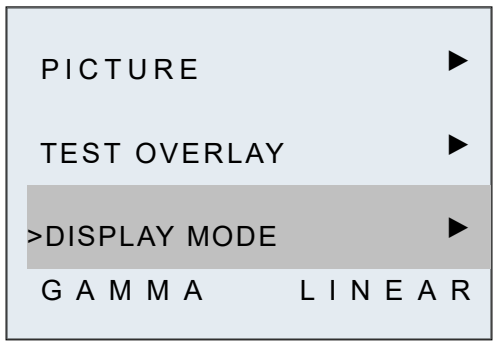


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PRESET:User, WhONBk1 (white on black), WhONBk2 (white on black), BkOnWh1(black on white), BkOnWh2(black on white), GrnOnBk1 (green on black), GrnOnBk2 (green on black), GrnOnWh1 (green on white)1, GrnOnWh2(green on white), RedOnBk1 (red on black), RedOnBk2 (red on black), RedOnWh1 (red on white), RedOnWh2(red on white)

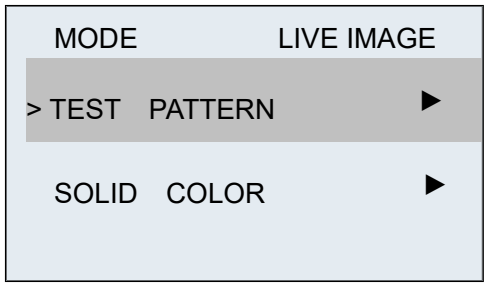
BLEND MODE:MODE 1 or MODE2
BLEND LEVEL:0-15
STAND (standard):BELOW or ABOVE
AND/OR :choose “and” or “or”
RED,GREEN,BLUE:value from 0 to 255

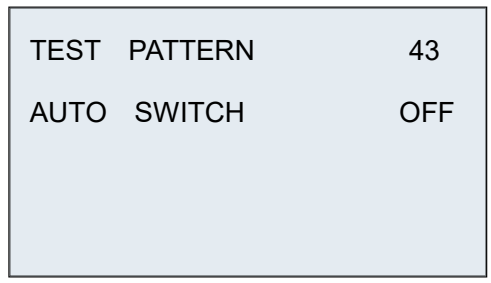
8. DISPLAY MODE



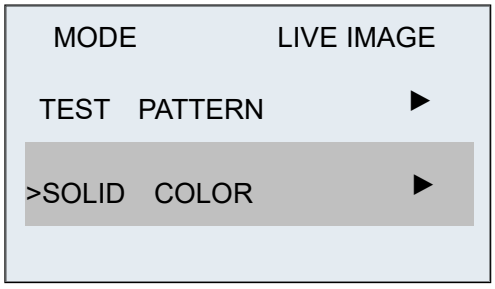


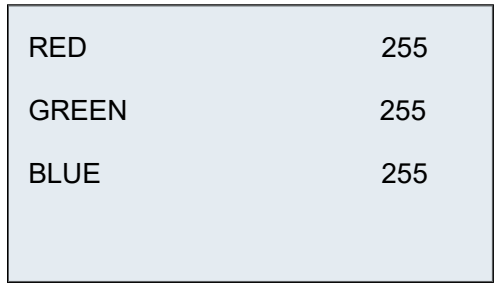
MODE: BLACK OUT, LIVE IMAGE, FREEZE IMAGE,SOLID COLOR, TEST PATTERN.
TEST PATTERN: Value 0-66
AUTO SWITCH: ON or OFF





SOLID COLOR
COLOR:WHITE, BLUE, GREEN, RED.





RED,GREEN,BLUE: value 0-255

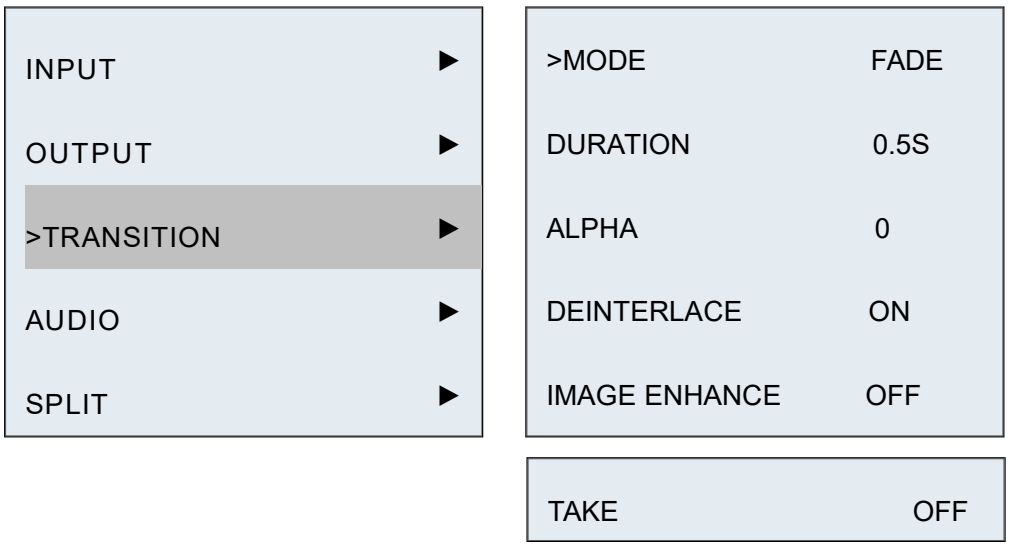
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9. GAMMA

LINEAR,sRGB, -1.2, 1.2, -1.4, 1.4, -1.6, 1.6

3.3.5 Transition

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



MODE: Special effects switching modes, including FADE, CUT, WIPE SOUARE IN, WIPE SOUARE 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.

Notice：**Seamless switching and PIP are NOT supported for HDMI and DVI input signals.**

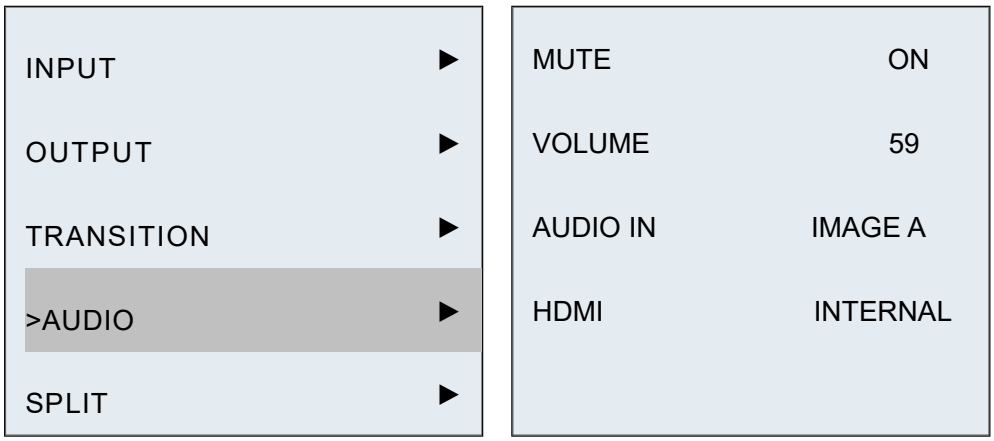
Black filled part indicates seamless switching is not supported; **X** indicates PIP is not supported.

Input Signal Channel Limitations		***Standard***				***Optional***
		HDMI	**DVI**	**VGA**	**CVBS**	**SDI**
Standard	**HDMI**	√	×	√	√	√
	DVI	×	√	√	√	√
	VGA	√	√	√	√	√

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	CVBS	√	√	√	√	√

3.3.6 Audio



MUTE:select ON or OFF

Volume:adjustment range from 0 to 100

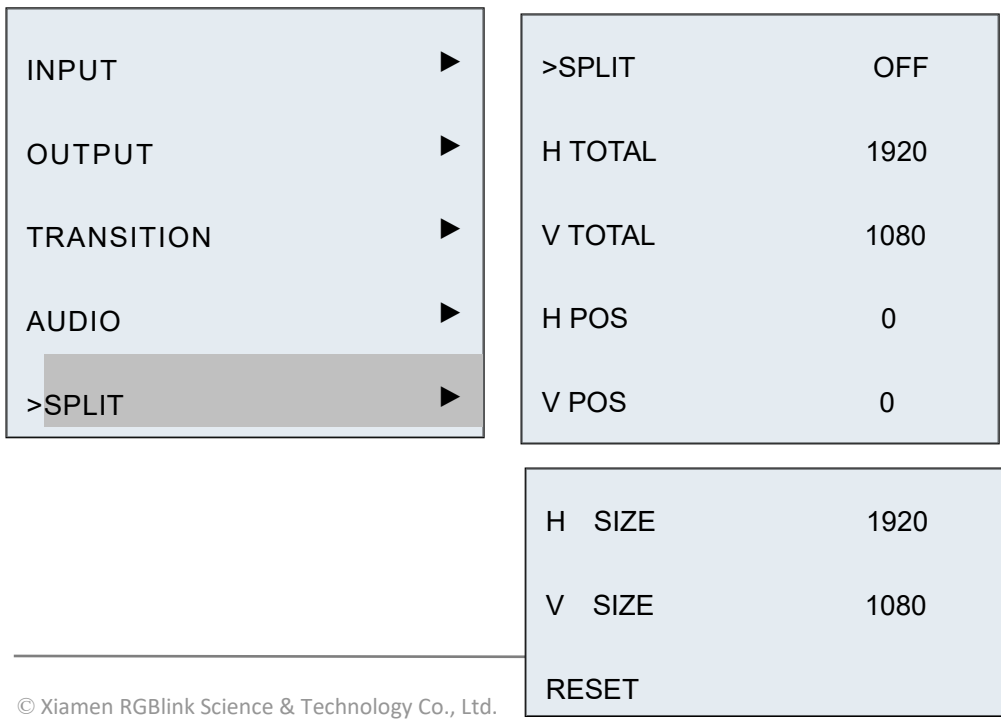
Users can also adjust volume without entering AUDIO menu. Rotate the knob anytime the LCD screen shows the main interface.

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

HDMI:select internal or external audio for HMDI input

3.3.7 Split

Image Control One 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 Image Control One. User can also do cascade via HDMI LOOP port.

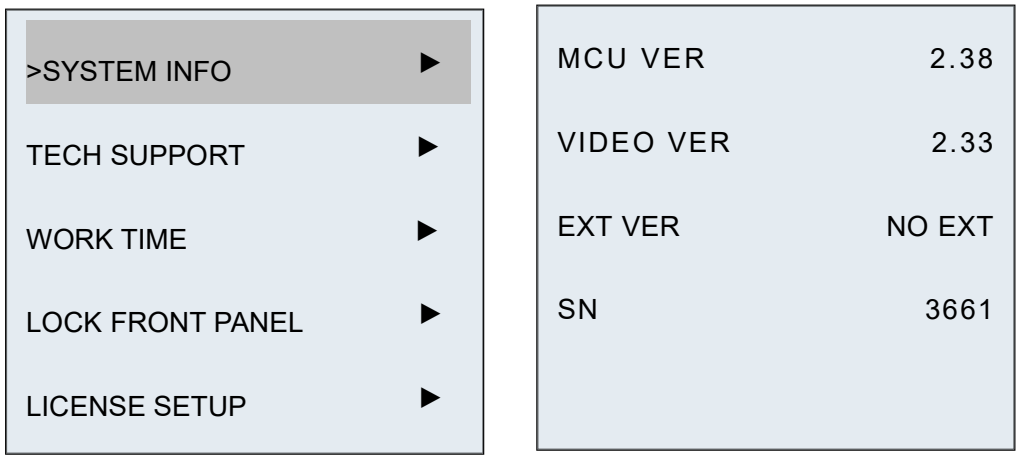


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H TOTAL:set the total horizontal pixels of the LED screen, maximum 65535
V TOTAL:set the total vertical pixels of the LED screen, maximum 65535
H POS: select the total number of horizontal screens
V POS: select the total number of vertical screens
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.

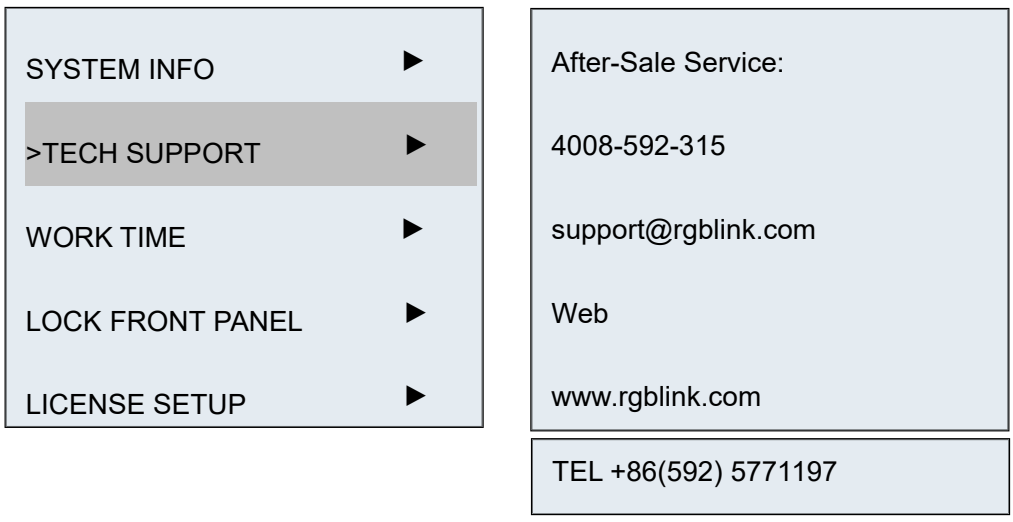
3.3.8 System

1. SYSTEM INFO



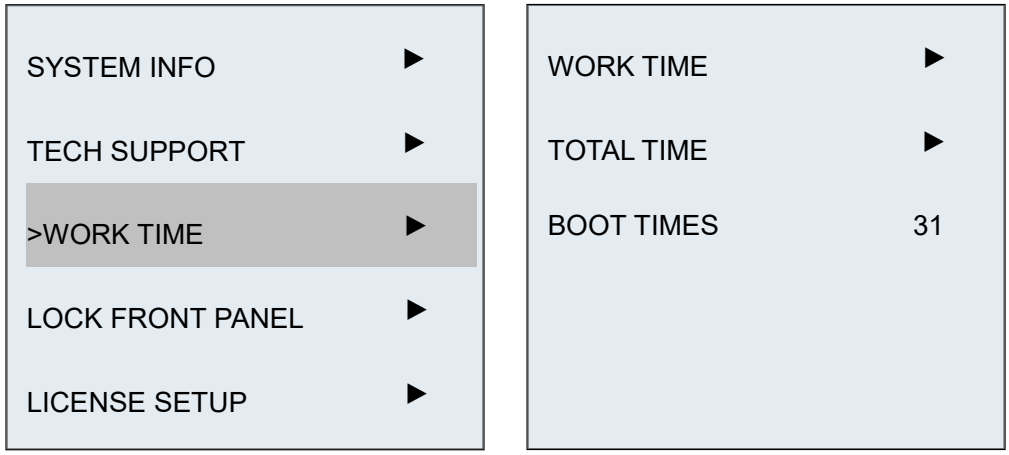
Show flowing information MCU VERSION, VIDEO VERSION, EXT VERSION, SN

2. TECH SUPPORT



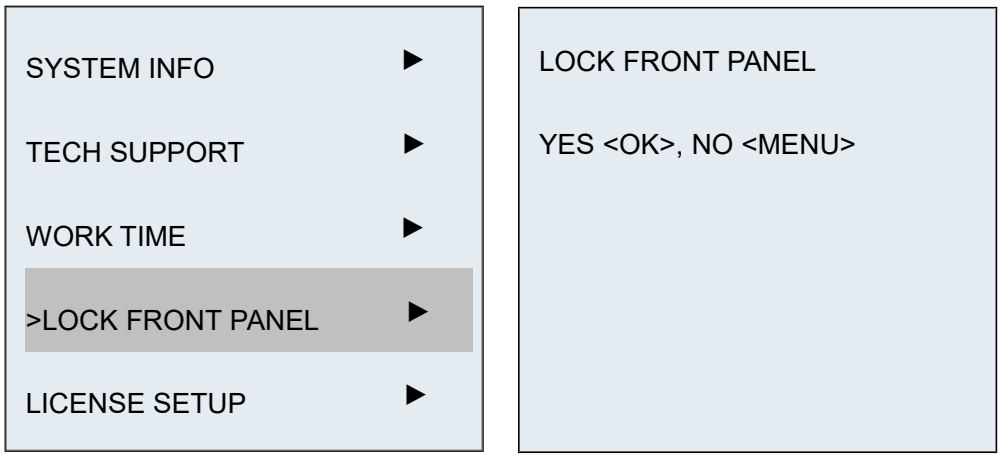
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3. WORK TIME



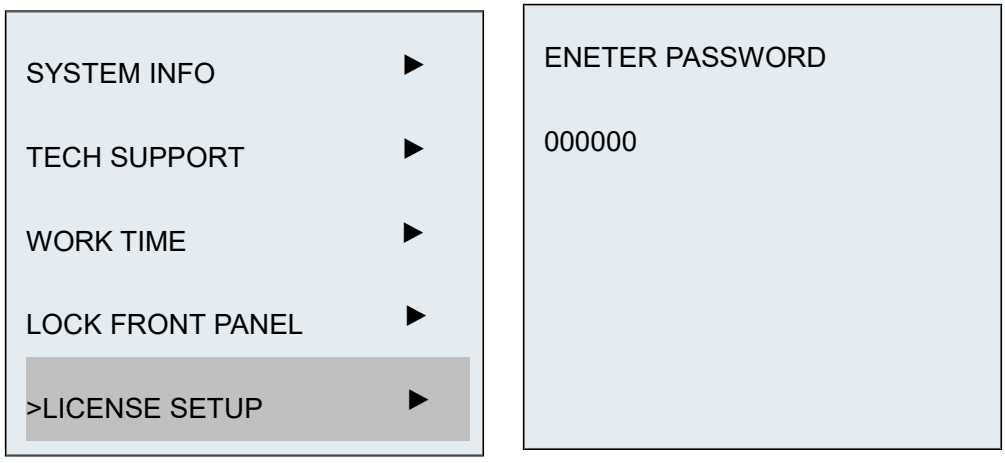
WORK TIME: the consistent working time since latest boot up.
TOTLAL TIME: the accumulative working time since the first boot up.
BOOT TIMES: the total boot up times up to now.

4. LOCK FRONT PANEL



YES <OK>, NO <MENU>
After the panel is locked, keep pressing MENU for 3 S to release the panel.

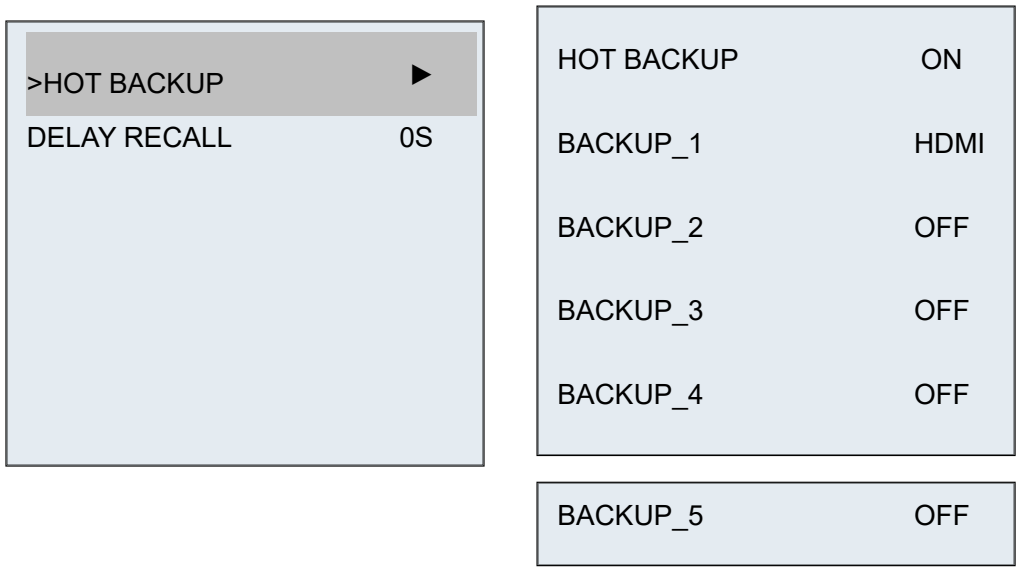
5. LICENSE SET UP



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ENETER PASSWORD 090721 and set new password for other users.

6. HOT BACKUP



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

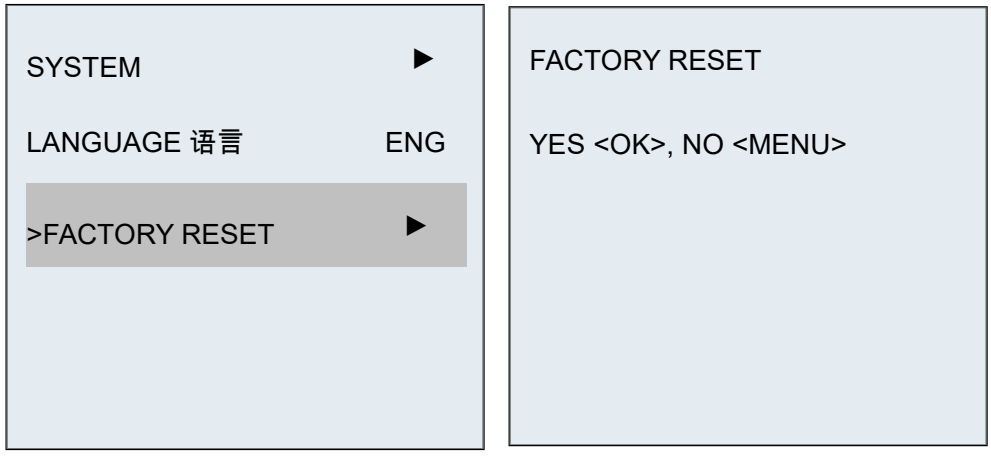
Value range from 0 to 255S

3.3.9 Language

To switch langue here. English or Chinese available.

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

3.3.10 Factory Reset



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3.4 Shortcut Buttons

Image Control One 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 Image Control One power on, system default HDMI input signal.

To switch signal, press CVBS,VGA,DVI or SDI. For example, to switch to CVBS, push【VGA】VGA 4 button and the button flashes.

TAKE MODE allow users to switch inputs with transition effect

To Enable TAKE mode , Keep pressing TAKE button for 3s and the TAKE MODE is ON.

The LCD screen shows the info below for 2S

TAKE MODE ON
AUDIO INVALID

And then go back to the main interface .If user want to switch to DVI signal, push【DVI】 DVI 5 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 cann't be enabled unless TAKE MODE is OFF.

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

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

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

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PIP L+T PBP L+R PBP T+B



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.

Notice： Seamless switching and PIP are NOT supported for HDMI and DVI input signals.

Black filled part indicates seamless switching is not supported; **X** indicates PIP is not supported.

Input Signal Channel Limitations		*Standard*				*Optional*	
		HDMI	DVI	VGA	CVBS	SDI	HDMI/DVI/SDI/USB/CVBS/VGA
Standard	HDMI	√	×	√	√	√	√
	DVI	×	√	√	√	√	√
	VGA	√	√	√	√	√	√
	CVBS	√	√	√	√	√	√
Optional	SDI	√	√	√	√	√	√

3.4.3【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

```
SAVE TO

>SAVE 1    FINISHED!

KEY ON FOR EMPTY
```

3.4.4【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

>SAVE 1

KEY ON FOR ALL SAVES

FLASH IS CURRENT SET
```

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

3.4.5【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	768
V SIZE	432
H POS	0
V POS	0
RESET	

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.

3.4.6【SPLIT】Button

SPLIT function only works when two or more X1 GEN2 units in cascade.
the cascade splicing parameters can be accessed from the front panel button <SPLIT>.

Take two X1 GEN2 cascade splicing to form 3800x2100 size screen for example, the first one carries 1920x1080 screen size, the second one carries 1900x1020 parameter settings as follows:

The first X1 GEN2 SPLIT menu is set as follows:
SPLIT : Select ON
H TOTAL: Enter cascade splicing size of the total width 3800
V TOTAL: Enter the total height of the cascade splice size 2100.
H POS: Input the horizontal position of splicing, because the first one is from the starting point (0,0), so enter 0 here.
V POS: Enter the vertical position of the splice, since the first unit is from the start point (0,0), so enter 0 here.

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SPLIT	ON
H SIZE	3800
V SIZE	2100
H POS	0
V POS	0

The second X1 GEN2 SPLIT menu is set as follows:

SPLIT : Select ON

H TOTAL: Enter the total width of the cascade splicing size 3800

V TOTAL: Enter the total height of the cascade splice size 2100.

H POS: Enter the horizontal position of splicing, because the second one is from (1920,1080), so enter 1920 here.

V POS: Enter the vertical position of splicing, because the second one is from (1920,1080), so enter 1080 here.

SPLIT	ON
H SIZE	3800
V SIZE	2100
H POS	1920
V POS	1080

3.4.7【BLACK】Button

The black field signal is a special effect made to satisfy the customer to achieve one key black screen in special scenes.

X1 Gen2's black field to the output of special effects processing, black field using straight black effect, the operation is as follows:

Touch the key, the key light is on, the output can realise the straight black effect to achieve one-key black screen, the effect is as shown in the picture:







Chapter 4 Ordering Codes

4.1 Product

110-0002-01-0	X1 Gen2
110-0002-02-0	X1-S Gen2

Chapter 5 Support

5.1 Contact Us

www.rgblink.com



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Beijing Region Office
Beijing, China

Building 8, 25 Qixiao Road Shahe Town Changping

+010- 8577 7286

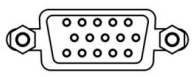
Europe Regional Sales & Support
Eindhoven, Holland

Flight Forum Eindhoven 5657 DW

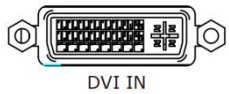
+31 (040) 202 71 83

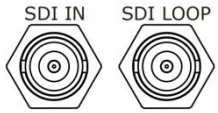
Chapter 6 Appendix

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	 HDMI IN HDMI LOOP
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 band pixels

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	

DVI Output (Standard)	
Number of Outputs	2
Connector	DVI-I

Interface Appearance	 DVI2 OUT  DVI1 OUT
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

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%

6.2 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.

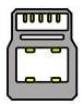
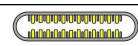
● **USB:** Universal Serial Bus is a standard that was developed in the mid-1990s that defines cables, connectors and communication protocols. This technology is designed to allow a connection, communication and power supply for peripheral devices and computers.

● **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.

6.4 Revision History

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

Version	Time	ECO#	Description	Editor
V1.0	2024-11-20	0000	Release	Rainbow

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