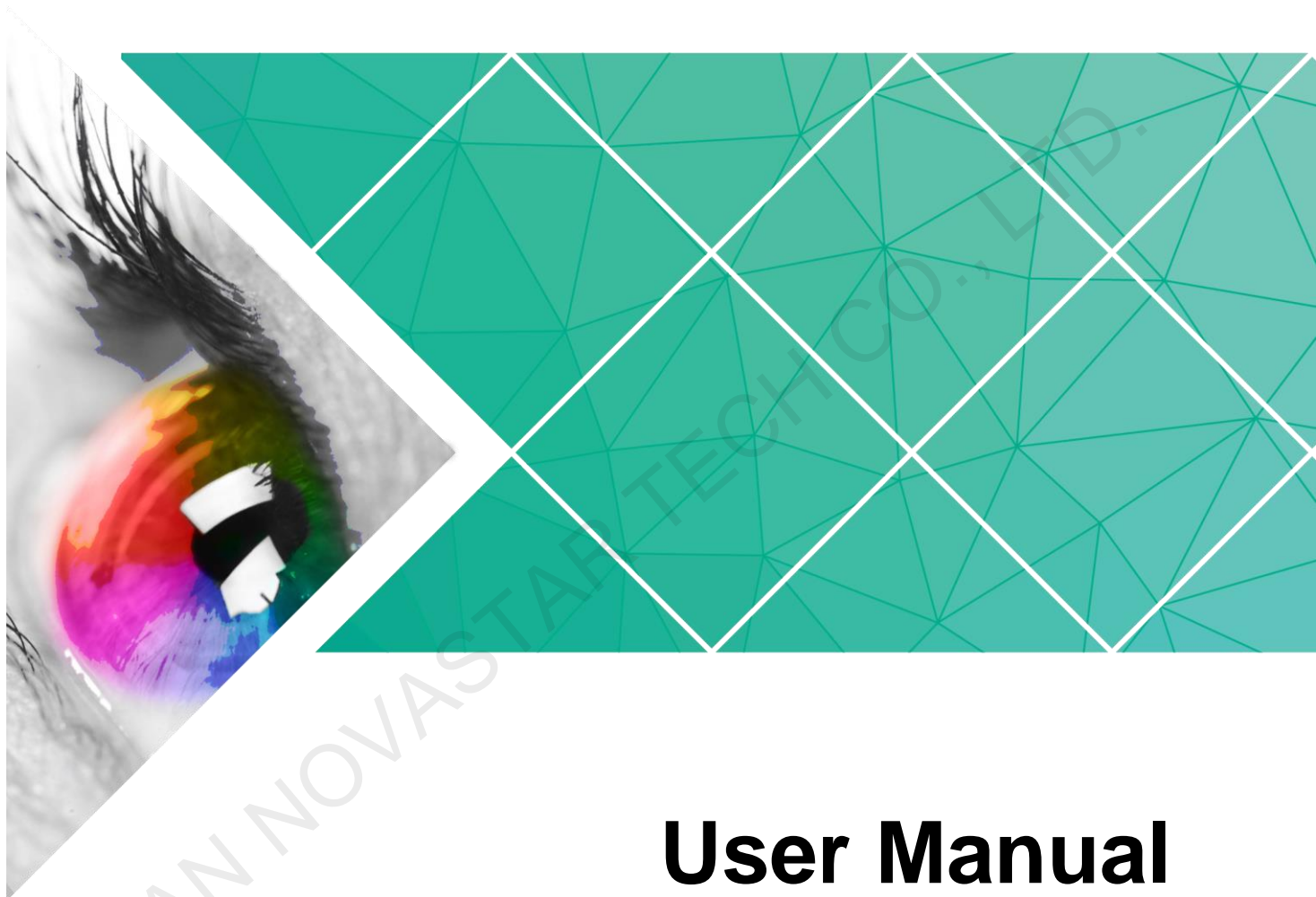


VX6s

All-in-One Video Controller



User Manual

Document Version: V1.0.0

Document Number: NS160100270

Copyright © 2018 Xi'an NovaStar Tech Co., Ltd. All Rights Reserved.

No part of this document may be copied, reproduced, extracted or transmitted in any form or by any means without the prior written consent of Xi'an NovaStar Tech Co., Ltd.

Website: www.novastar.tech

Preface

Overview

The VX6s is an all-in-one video controller that integrates sending card functions with video processing. Designed with powerful video processing capability, it supports 10 video inputs and 6 Gigabit Ethernet outputs.

Based on the powerful FPGA processing platform, the VX6s supports multiple transition effects, such as quick seamless switching and fade, providing flexible display controlling and outstanding video presentations.







The VX6s is equipped with an Android daughterboard which can connect a USB drive to play the media files stored in it. By connecting a mouse and monitor, the USB playback can be intuitively monitored in real-time.

Reader

This document is intended for the following personnel:

- Technical support engineers
- On-site operators

Symbols

Symbol	Description
	High voltage danger: Operating voltage of the product ranges from 100 to 240 VAC.
	Grounding: The product connects to the ground upon the ground wire of the power supply. Please ensure good grounding of the grounding conductor.
	Electromagnetic interference: The device shall be kept away from magnet, motor or transformer.
	Please put the device in a dry and clean environment. In case of liquid immersing, please pull out the power plug immediately.
	Keep the device away from explosive or flammable articles.
	Forbid liquid or metal fragment immersing towards the machine interior to avoid security accidents.

Change History

Version	Release Date	Description
V1.0.0	2018-07-24	First release

XI'AN NOVASTAR TECH CO., LTD.

Contents

Preface	ii
1 Overview	1
2 Appearance	2
2.1 Appearance	2
2.2 Applications	4
2.3 Home Screen	5
3 Menu Operations	6
3.1 Operation Instructions	6
3.2 Screen Brightness	6
3.3 Input Settings	7
3.3.1 Input Resolution	7
3.3.2 Color Adjustment	8
3.4 Screen Settings	9
3.4.1 Quick Configuration	9
3.4.2 Advanced Configuration	10
3.4.3 RV Card Color	11
3.4.4 Loading RCFGx Files	11
3.4.5 Saving to RV Card	13
3.4.6 Mapping	14
3.4.7 Configuration Template	14
3.5 Window Settings	14
3.6 OSD Settings	15
3.7 Display Control	16
3.8 Preset Settings	17
3.9 Advanced Settings	18
3.10 Communication Settings	20
3.11 Language	22
4 USB Playback	23
5 Product Specifications	25

1 Overview

The VX6s is an all-in-one video controller that integrates sending card functions with video processing. Designed with powerful video processing capability, it supports 10 video inputs and 6 Gigabit Ethernet outputs.

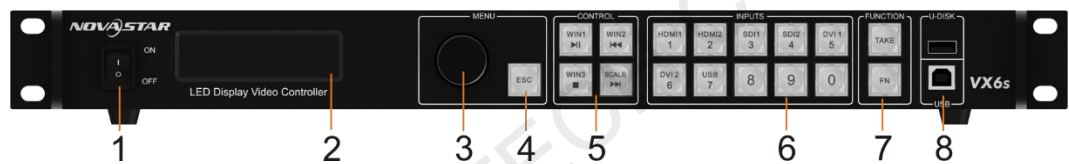
Based on the powerful FPGA processing platform, the VX6s supports multiple transition effects, such as quick seamless switching and fade, providing flexible display controlling and outstanding video presentations.

The VX6s is equipped with an Android daughterboard which can connect a USB drive to play the media files stored in it. By connecting a mouse and monitor, the USB playback can be intuitively monitored in real-time.

2 Appearance

2.1 Appearance

Front Panel



No.	Button	Function
1	ON/OFF button	Power button
2	OLED screen	Displays the current status and setting menu of the device.
3	Knob	<ul style="list-style-type: none">On the home screen, pressing the knob enters the operation menu screen.On the operation menu screen, rotating the knob selects a menu item, and pressing the knob confirms the selection or enters the submenu.When a menu item with parameters is selected, you can rotate the knob to adjust the parameters. Please note that after adjustment, you need to press the knob again to confirm the adjustment.
4	ESC button	Pressing the button exits the current menu or operation.
5	Window and preset buttons	<p>Pressing a button enters the corresponding window property menu.</p> <p>Statuses of button indicators:</p> <ul style="list-style-type: none">On: The window is open.Off: The window is closed.Flashing: The window is being edited. <ul style="list-style-type: none">When a window is open, holding down the window button can close the window.

		<ul style="list-style-type: none"> In the USB playback mode, you can play, pause, fast forward, rewind or stop current playback. SCALE: This is a shortcut button for auto fit function. You can press this button to make the window of the lowest priority fit the screen.
6	Input source buttons	<p>Indicates the status of the input source.</p> <ul style="list-style-type: none"> Always on: The signal source is accessed and in use. Off: No input source is accessed or the input source is not in use. Flashing: The signal source is accessed but no source is available.
7	Function buttons	<ul style="list-style-type: none"> TAKE: In the switcher mode, pressing the TAKE button can switch the PVW to PGM seamlessly with the transition effect set previously. FN: A custom menu button
8	USB	<ul style="list-style-type: none"> USB (Type-B): Connects to the upper computer. USB (Type-A): A reserved port

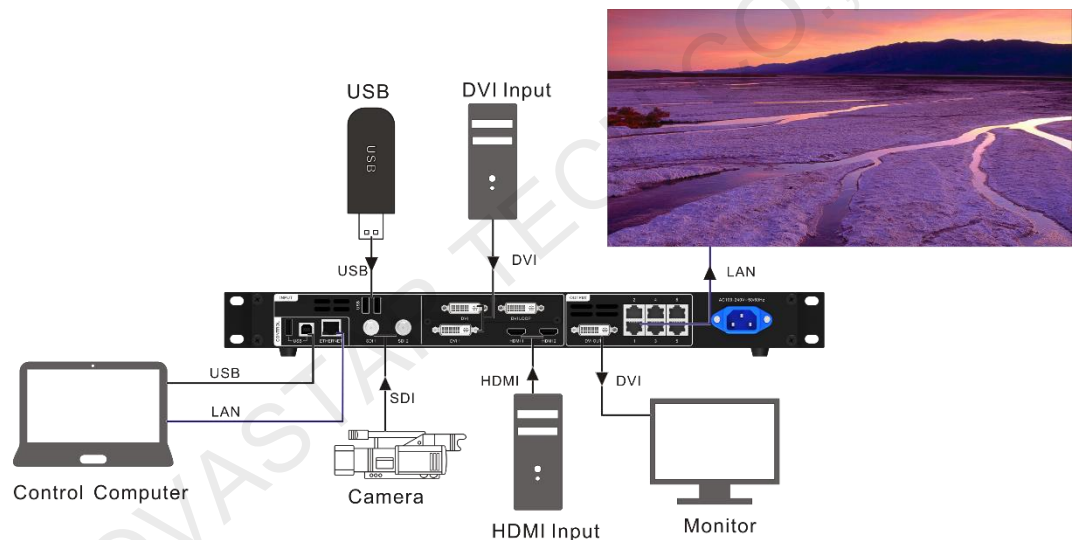
Rear Panel



Input		
Connector	Quantity	Description
3G-SDI	2	Supports input resolutions up to 1920×1080@60Hz and downward compatibility.
USB	2	<ul style="list-style-type: none"> Connects to a USB flash drive to play video or picture files stored in the drive. Connects to a mouse.
DVI	2	<p>VESA standard</p> <p>Supports input resolutions up to 1920×1200@60Hz and downward compatibility.</p> <p>Supports HDCP.</p>
DVI LOOP	1	DVI loop output connector
HDMI	2	<p>Supports input resolutions up to 1920×1200@60Hz and downward compatibility.</p> <p>Supports HDCP.</p>
Output		
Connector	Quantity	Description
Ethernet	6	6 Ethernet outputs

DVI	1	A monitoring connector, which can be set to preview the editing image or monitor the PGM
Control		
Connector	Quantity	Description
Ethernet	1	Connects to the PC for communication, or to the network.
USB (Type-B)	1	<ul style="list-style-type: none"> Connects to the PC for device control. Used as the input port for cascading devices
USB (Type-A)	1	Used as the output port for cascading devices

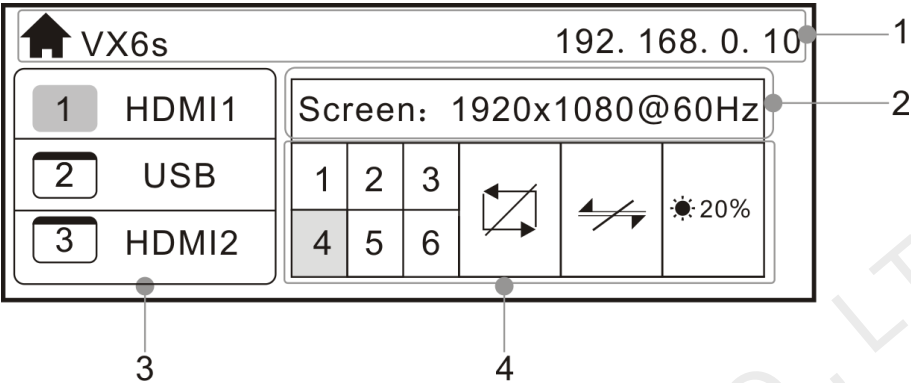
2.2 Applications









2.3 Home Screen

After the VX6s is powered on, the home screen is shown in the figure below.

Figure 2-1 Home screen



1. Product name and device IP address
2. Resolution of configured screen and output refresh rate
3. Current window status and input source of each window
4. Status bar: The icons are described as follows.

<table><tr><td>1</td><td>2</td><td>3</td></tr><tr><td>4</td><td>5</td><td>6</td></tr></table>	1	2	3	4	5	6	Output Ethernet ports (Current output uses Ethernet port 4 and the device works in primary mode. If it works in backup mode, the icon is displayed as <table><tr><td>1</td><td>2</td><td>3</td></tr><tr><td>4</td><td>5</td><td>6</td></tr></table> .)	1	2	3	4	5	6
1	2	3											
4	5	6											
1	2	3											
4	5	6											
	The buttons are locked. When you press the knob or any other buttons, if this lock icon appears on the front panel, it indicates that the knob and button are locked currently.												
	The buttons are unlocked.												
	The device is not connected to the control computer.												
	The device is connected to the control computer via USB port.												
	The device is connected to the control computer via Ethernet port.												
 20%	LED screen brightness												

3 Menu Operations

The VX6s has powerful functions and is easy to operate. By using the knob and ESC button, you can perform any operations. Besides, you can switch the input sources by pressing only one button.

3.1 Operation Instructions

Knob

- On the home screen, pressing the knob enters the operation menu screen.
- On the operation menu screen, rotating the knob selects a menu item, and pressing the knob confirms the selection or enters the submenu.
- When a menu item with parameters is selected, you can rotate the knob to adjust the parameters. Please note that after adjustment, you need to press the knob again to confirm the adjustment.

ESC

This is a return button used to exit current menu or operation.

Button Locking and Unlocking

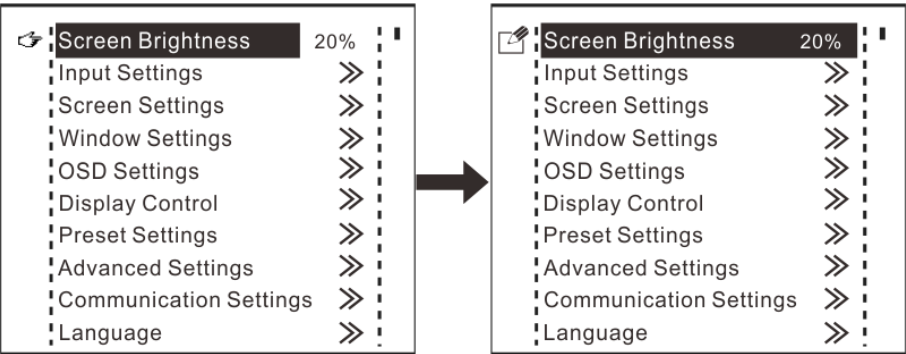
Holding down the knob and **ESC** button simultaneously locks or unlocks all the buttons.

3.2 Screen Brightness

This function is used to adjust the LED display brightness.

On the home screen, press the knob to enter the menu. Then, rotate the knob to select **Screen Brightness** and press the knob to enter the brightness adjustment status. At last, rotate the knob to adjust the brightness value. After you set the brightness value, press the knob to confirm it.

Figure 3-1 Screen brightness



3.3 Input Settings

The resolutions of input sources can be changed on the VX6s. Currently, only HDMI and DVI connectors support setting the input resolutions. To change the resolutions of other connectors, the only way is to change the output resolutions on the front-end devices.

3.3.1 Input Resolution

The input resolution can be set through either of the following ways.

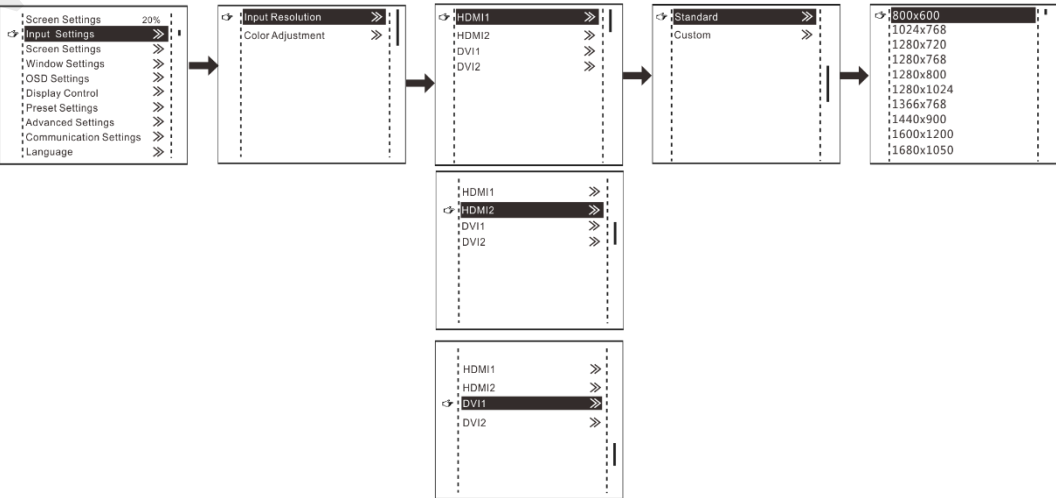
- Choosing a standard resolution
- Customizing a resolution

Standard Resolution

The refresh rate of standard resolutions defaults to 60 Hz. If you want to change the refresh rate, go to the **Custom** menu.

Standard resolutions: 800×600, 1024×768, 1280×720, 1280×768, 1280×800, 1280×1024, 1366×768, 1440×900, 1600×1200, 1680×1050, 1920×1080, 1920×1200

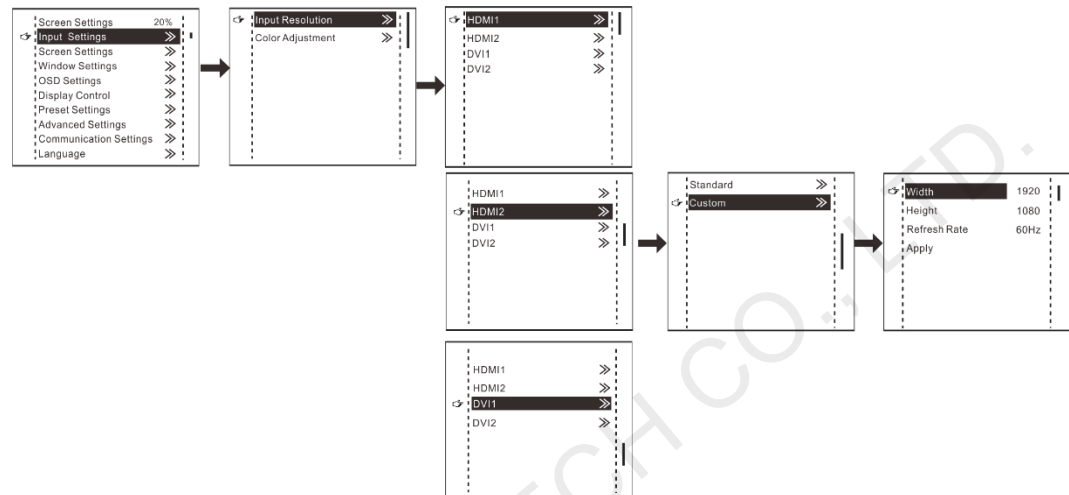
Figure 3-2 Standard resolution



Custom Resolution

Rotate the knob to set a custom width (increasing by even numbers), height and refresh rate. After setting these parameters, rotate the knob to select **Apply** and press the knob to apply the settings. If you do not press the knob to apply the settings, the custom resolution will not take effect.

Figure 3-3 Custom resolution

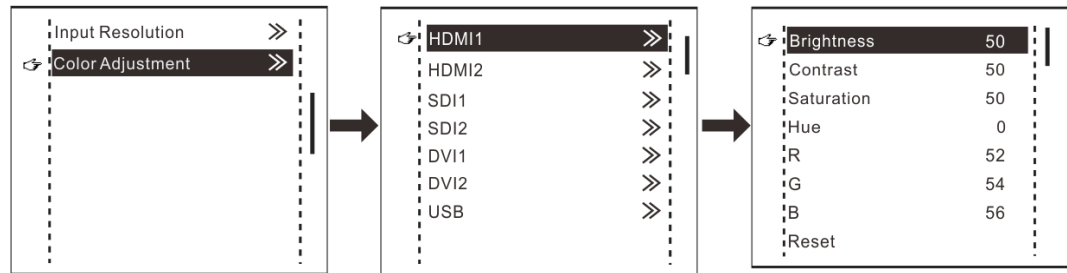


3.3.2 Color Adjustment

The VX6s supports adjustment of the input color (namely image quality), including brightness, contrast, saturation, hue and red/green/blue brightness (**R/G/B**).

- Step 1 Choose **Color Adjustment** > **HDMI 1** to enter the color adjustment page of HDMI 1 input source.
- Step 2 Rotate the knob to select a parameter item you want to adjust and press the knob to enter the parameter adjustment status. Then, rotate the knob to adjust the parameter value. At last, press the knob again to confirm the adjustment.
- **Brightness:** The brightness of the input source
 - **Contrast:** The ratio of the luminance of the brightest color (white) to that of the darkest color (black)
 - **Saturation:** The degree of how deep or how light the colors of the input source image is
 - **Hue:** The category of the colors of the input source image, namely red, green and blue
 - **R:** The color cast of input source images. When the red parameter value is greater, the image color is redder. The **G** and **B** have the same meaning.
 - **Reset:** Reset all parameters in the input color adjustment menu to the original default values.

Figure 3-4 Input color adjustment

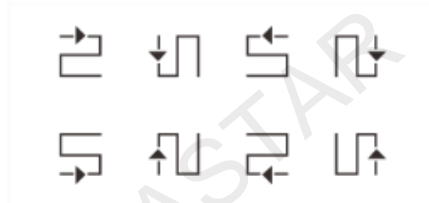


3.4 Screen Settings

3.4.1 Quick Configuration

Prerequisites

- The LED screen is a regular one, not an irregular one.
- The cabinets of the LED screen are regular, and each cabinet has the same resolution.
- The cabinet connection (data flow) must be one of the following 8 patterns. The physical connection of cabinets loaded by each Ethernet port must be along the same direction.

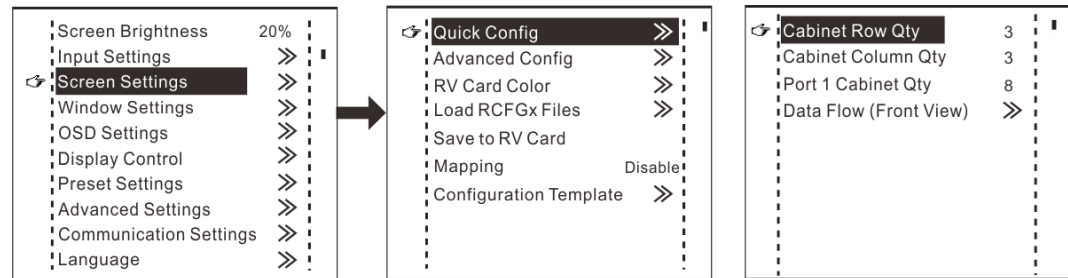


- During data flow settings, ensure that the Ethernet port 1 is at the beginning position of the whole physical connection and the ports must be connected in order.

Operating Procedures

- Step 1 Power on the LED screen.
- Step 2 On the menu page, choose **Screen Settings > Quick Config** to enter the **Quick Config** page.
- Step 3 Set **Cabinet Row Qty** and **Cabinet Column Qty** (number of cabinet rows and columns) based on actual conditions of the LED screen.

Figure 3-5 Quick configuration



- Step 4 Rotate the knob to select **Port 1 Cabinet Qty** (number of cabinets loaded by Ethernet port 1) and set the number of cabinets.

Note:

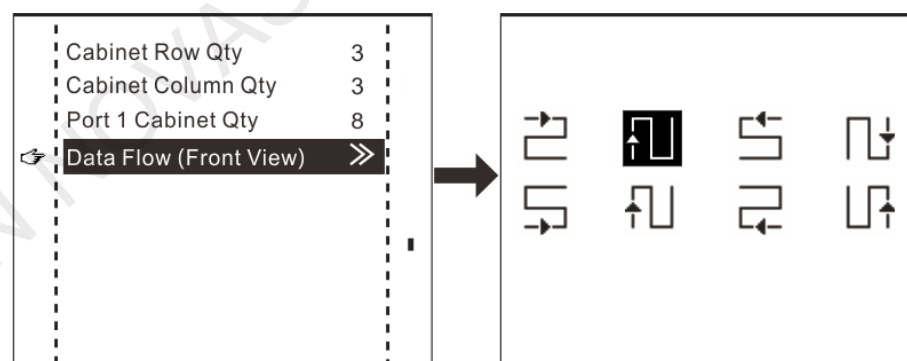
The number of cabinets loaded by Ethernet port 1, 2, 3, 4 and 5 individually must be the same. The number of cabinets loaded by Ethernet port 6 must be less than or equal to that of Ethernet port 1.

The number of cabinets loaded by each Ethernet port must be the integral multiple of the number of cabinet rows or columns in the LED screen.

- Step 5 Rotate the knob to select **Data Flow (Front View)** and press the knob to select one data flow according to current cabinet connection.

When setting the data flow, you can view the results of different data flow patterns in real time on LED display by rotating the knob. When you are satisfied with the LED display image in which no image parts are overlapped or displayed repeatedly, press the knob to apply and save the selected data flow. If you press the **ESC** button, you will exit current operation and the data flow in preview will not be saved.

Figure 3-6 Data flow

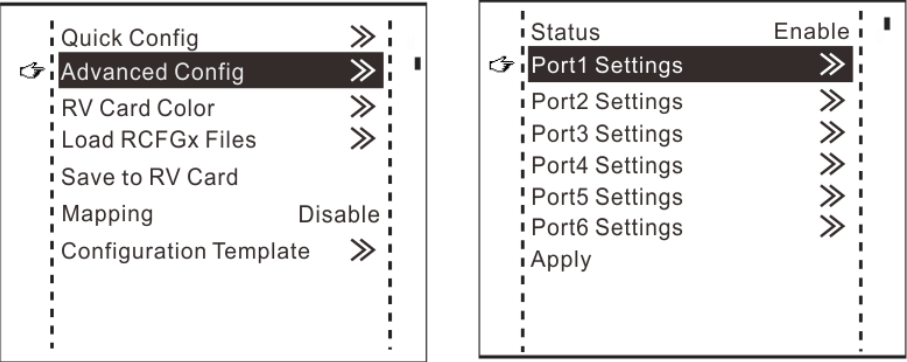


3.4.2 Advanced Configuration

The connection of cabinets loaded by each Ethernet port must follow the 8 data flow patterns provided in the VX6s.

In advanced configuration, you must manually set the **Cabinet Row Qty**, **Cabinet Column Qty**, **Horizontal Offset**, **Vertical Offset** and **Data Flow** for each Ethernet port. It is recommended that you use this function under guidance of technical personnel.

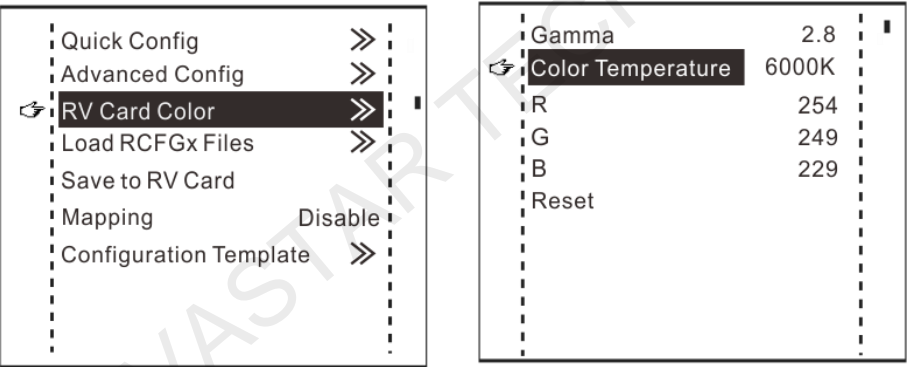
Figure 3-7 Advanced configuration



3.4.3 RV Card Color

You can adjust the color (namely image quality) of the images displayed on the screen, including Gamma, color temperature, red/green/blue brightness (R/G/B), and reset the image quality to the default values.

Figure 3-8 Receiving card color

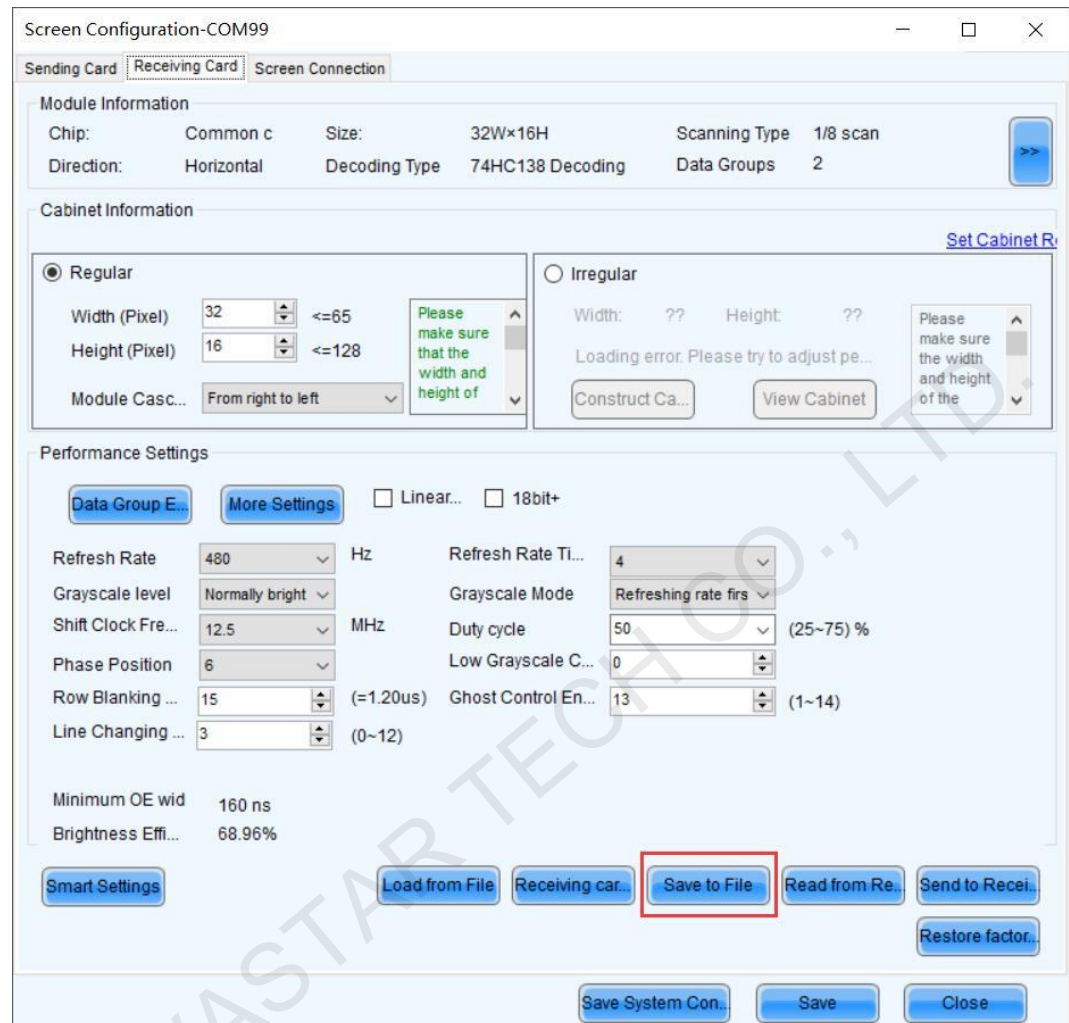


3.4.4 Loading RCFGx Files

After the LED screen is powered on, if a certain cabinet or the entire LED screen cannot be lit, you can load the receiving card configuration files (namely RCFGx files) that have been configured on NovaLCT software to the VX6s.

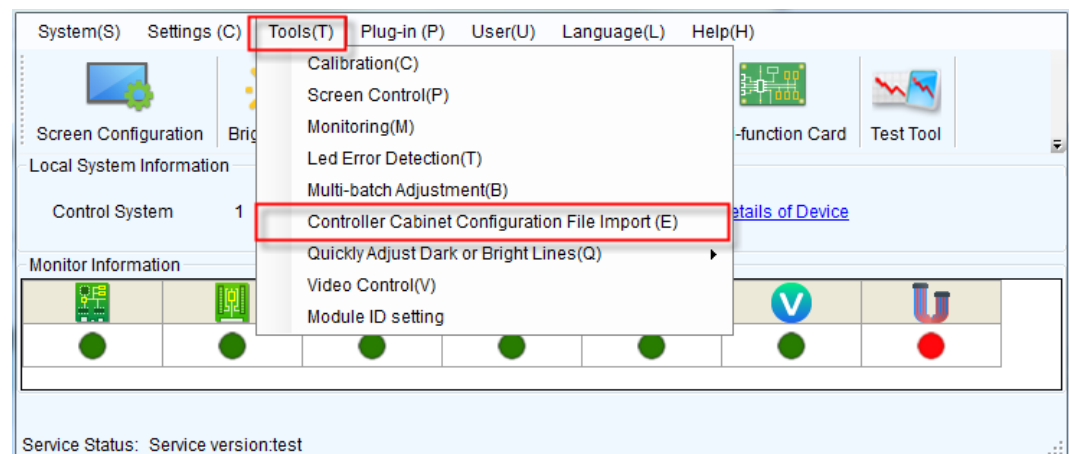
- Step 1 On NovaLCT, after you configured the screen, click **Save to File** to save the configuration file to PC.

Figure 3-9 Saving receiving card configuration file



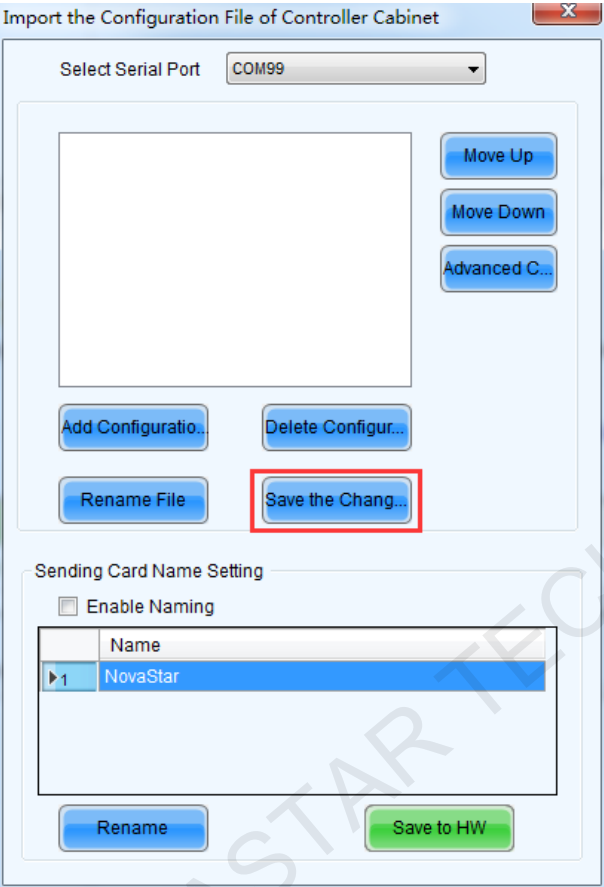
- Step 2 On NovaLCT, choose **Tools > Controller Cabinet Configuration File Import**, click **Add Configuration File** and select the configuration file you have saved to PC in step 1.

Figure 3-10 Importing controller cabinet configuration file



- Step 3 Review the configuration file name and click **Save the Change to HW** to save the configuration file to the VX6s.

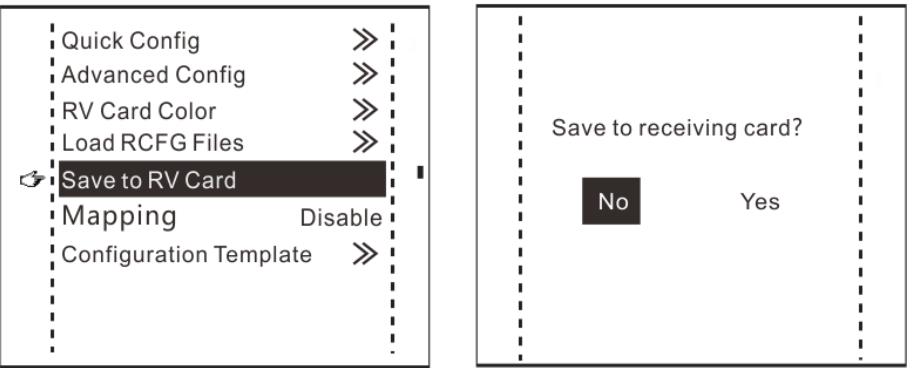
Figure 3-11 Saving configuration file to VX6s



3.4.5 Saving to RV Card

After the cabinet configuration file is loaded or the receiving card color is changed, if you save the configuration data to receiving card by using the **Save to RV Card** function, the configuration data will not be lost even if power failure occurred.

Figure 3-12 Saving to hardware



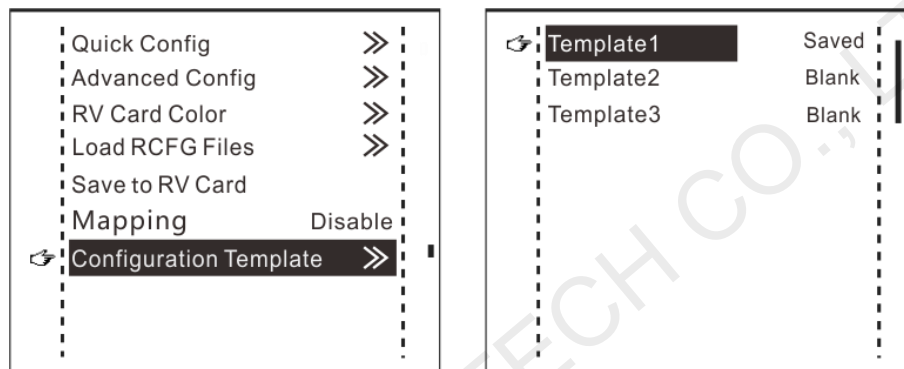
3.4.6 Mapping

When the **Mapping** function is enabled, each cabinet's receiving card No. and Ethernet port information will be displayed on the LED display, which makes it convenient to check the cabinet information.

3.4.7 Configuration Template

The VX6s supports configuring 3 templates of screen configuration. After the screen is configured, save the configuration parameters as a configuration template. The screen configuration parameters can be directly applied by choosing a template.

Figure 3-13 Configuration template



3.5 Window Settings

The VX6s supports up to 3 windows. The input source, size, position, priority and input cropping of each window can be set.

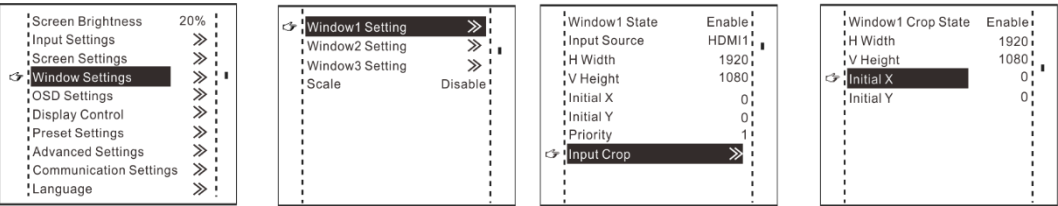
Window Settings

Step 1 Rotate the knob to select **Window1 Setting**, and press the knob to enter the submenu.

Step 2 Rotate the knob to select a parameter item you want to adjust and press the knob to enter the parameter adjustment status. Then, rotate the knob to adjust the parameter value. At last, press the knob again to confirm the parameter value.

- **Window1 State:** The status of current window
- **Input Source:** The input source used by current window
- **H Width:** The number of pixels in the horizontal direction
- **V Height:** The number of pixels in the vertical direction
- **Initial X:** The initial horizontal coordinate of the window
- **Initial Y:** The initial vertical coordinate of the window
- **Priority:** The displaying order of the window
- **Input Crop:** The function of cropping the input source and displaying the cropped input source on current window

Figure 3-14 Window settings



Scale

This function can automatically resize the window image and then fill the entire LED display with the resized window image.

3.6 OSD Settings

The VX6s supports overlapped display of the prestored images or text. After you add an OSD file on V-Can, you can send the file to VX6s.

Figure 3-15 Adding OSD

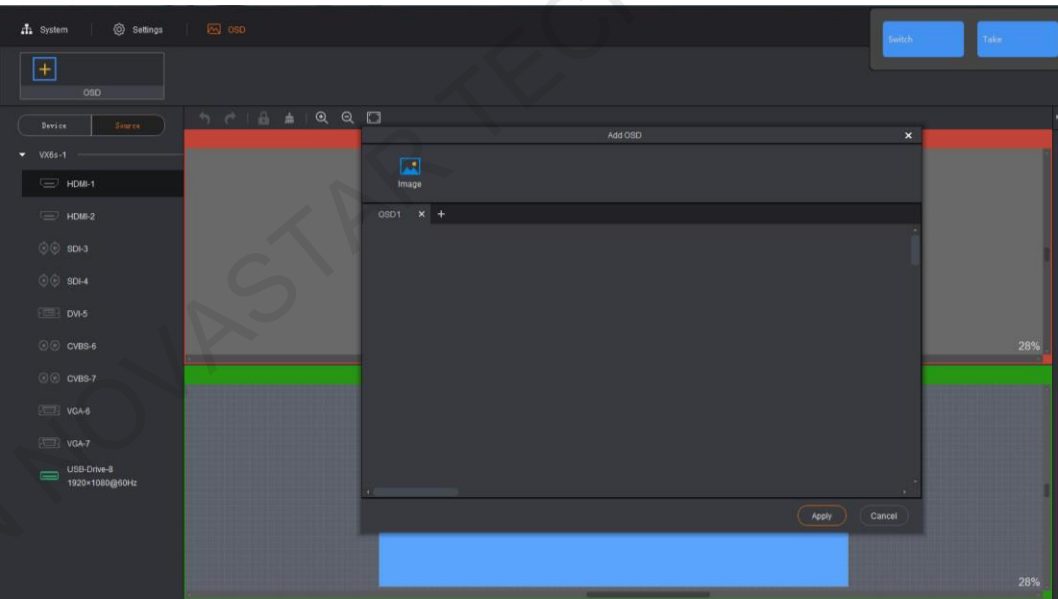
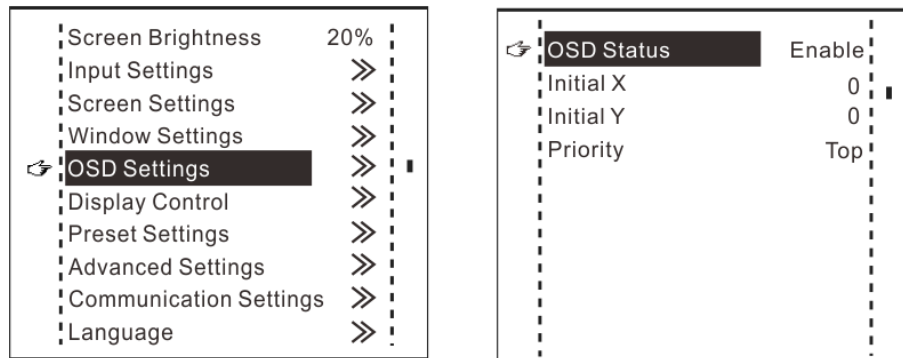


Figure 3-16 OSD settings

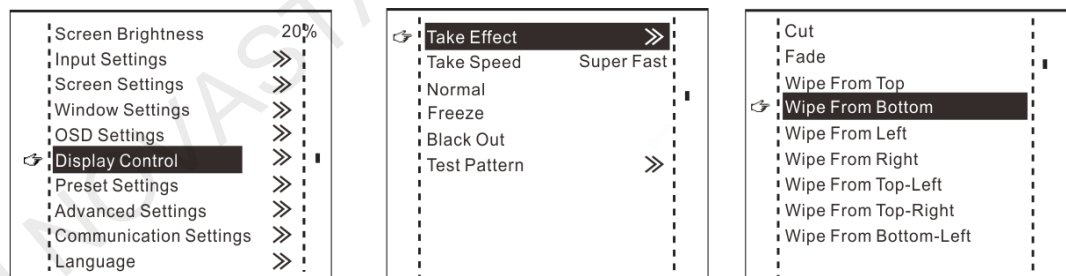


- **OSD Status:** The status of OSD function
- **Initial X:** The initial horizontal coordinate
- **Initial Y:** The initial vertical coordinate
- **Priority:** The priority of OSD over window. You can choose **Top** or **Bottom**.

3.7 Display Control

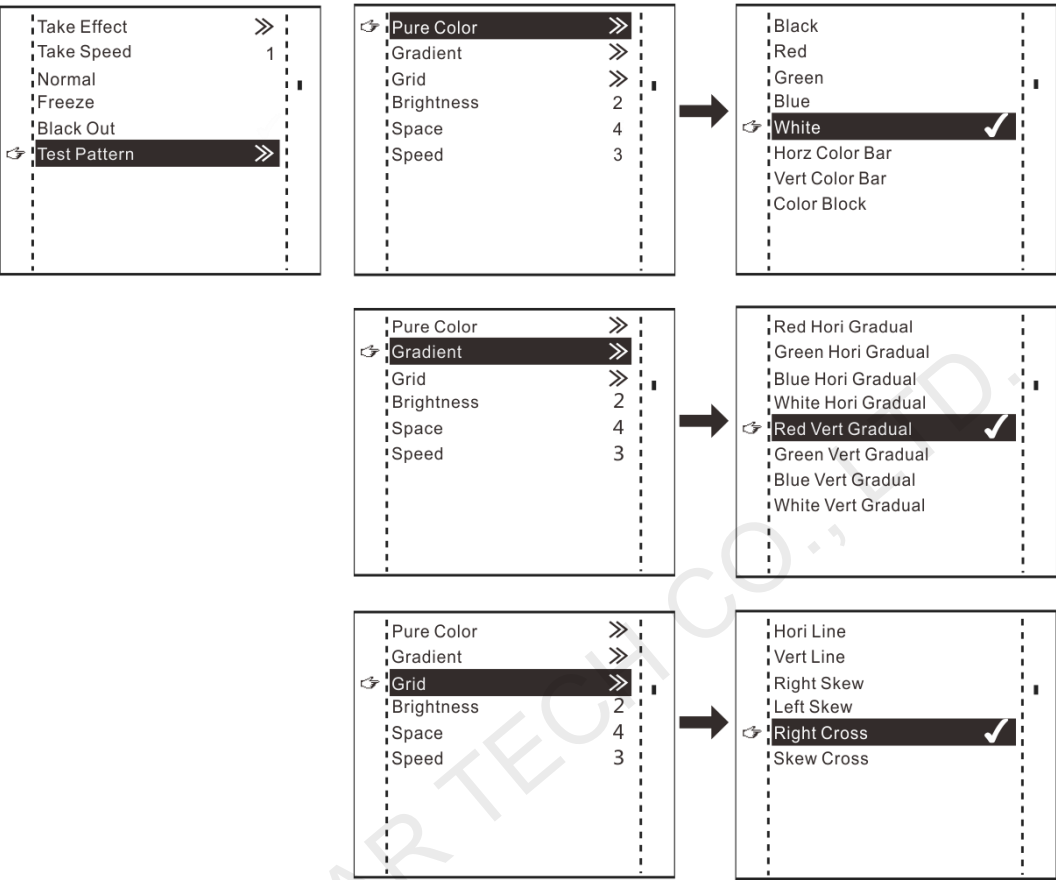
This function is used to control the display. You can set the display to go black, display a test pattern, or go to normal display. You can also set the Take effect and Take speed.

Figure 3-17 Display control



- **Take Effect:** The transition effects of sending PVW image to PGM. There are 22 effects in total, such as cut, fade, wipe from top, wipe from bottom, etc.
- **Take Speed:** The speed of transition effects, including slow, medium slow, medium, fast, and super fast.
- **Normal:** The LED screen displays the content of current input source normally.
- **Freeze:** The current frame is frozen and always displayed.
- **Black Out:** The screen goes black and does not display the content.
- **Test Pattern:** There are 22 test patterns in total, including pure colors, gradients and grids. You can adjust the brightness, space and speed of the test pattern based on test needs.

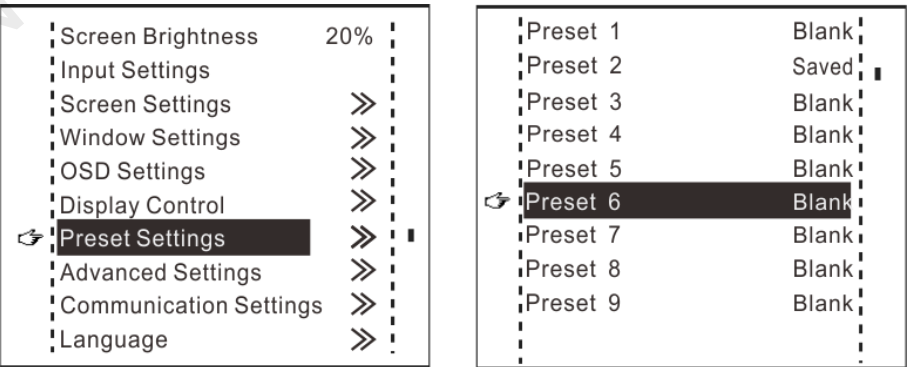
Figure 3-18 Test pattern



3.8 Preset Settings

The VX6s supports 16 user presets. After the preset data is configured, you can recall and use the configured presets by selecting the preset name.

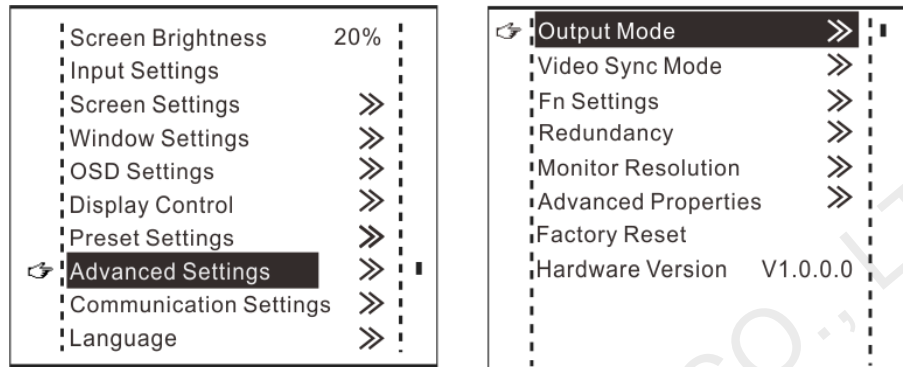
Figure 3-19 Preset settings



3.9 Advanced Settings

The advanced settings include output mode, video sync mode, Fn settings, redundancy, monitor resolution, advanced properties, factory reset and hardware version, as shown in the figure below.

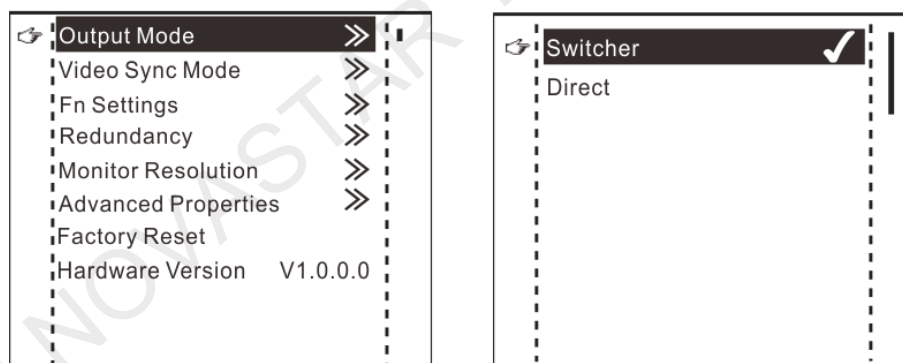
Figure 3-20 Advanced settings



Output Mode

You can set the output mode of VX6s here, including switcher and direct modes.

Figure 3-21 Output mode

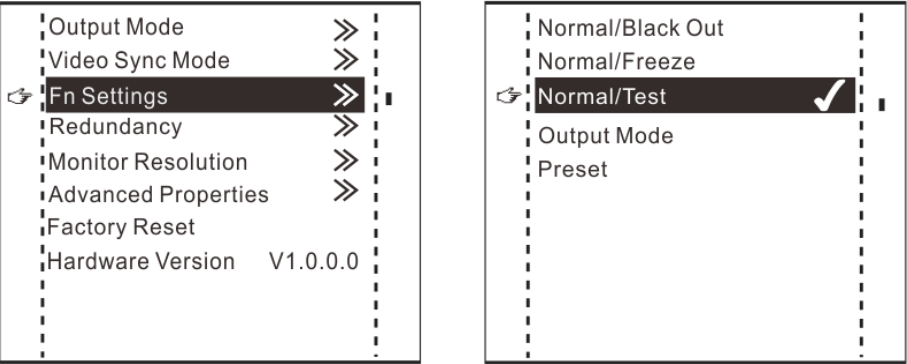


- **Switcher** mode: Preview the image being edited.
- **Direct** mode: Monitor the image being displayed on the LED screen.

Fn Settings

You can customize the function of the **FN** button on the front panel. Its function can be set as black out, freeze, test pattern, output mode, and preset. After setting, when you press the **FN** button, the corresponding function set to the button will directly be enabled.

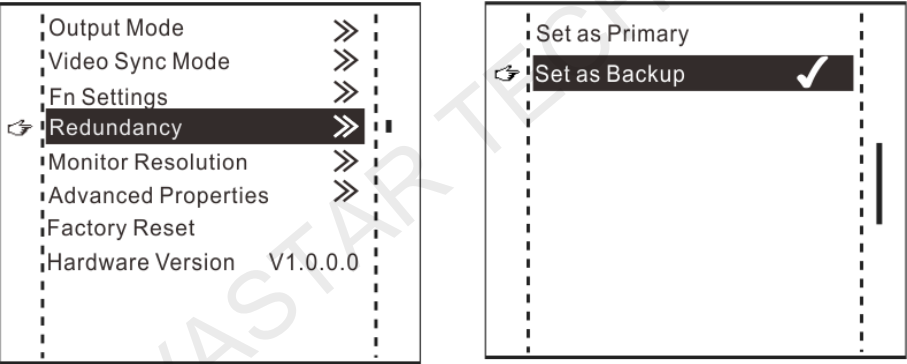
Figure 3-22 Fn settings



Redundancy

The VX6s supports redundancy settings. You can set current device as the primary or backup device. If the primary device becomes abnormal, the backup device can take over the work immediately. This can prevent black out of display.

Figure 3-23 Redundancy

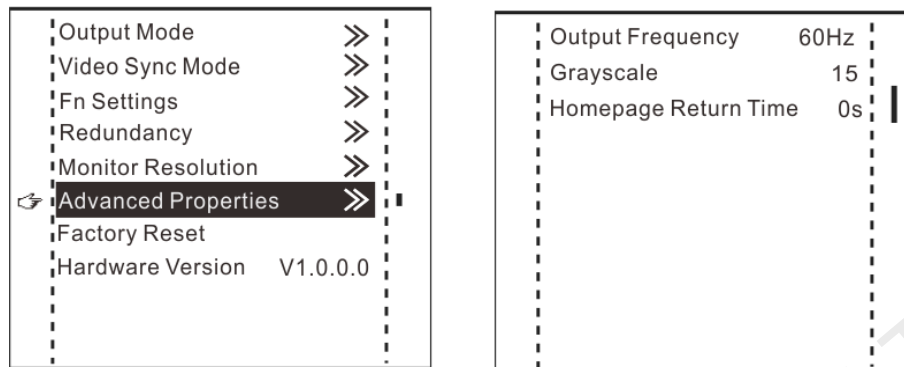


Monitor Resolution

In this function, you can adjust the resolution of images displayed on the monitor connected to the DVI connector. The resolution can be set to 1024×768, 1280×720, 1366×768, 1440×900, and 1920×1080.

Advanced Properties

Figure 3-24 Advanced properties

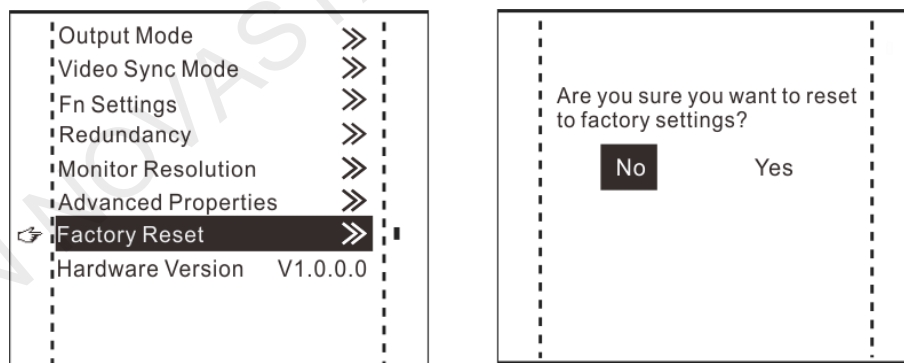


- **Output Frequency:** Adjust the output frequency of sending card. The range is 24 Hz–60 Hz.
- **Grayscale:** Adjust the grayscale of the OLED screen. The range is 4–15.
- **Homepage Return Time:** Set the period of time during which the system stays at the current page before returning to the homepage automatically when there is no operation performed.

Factory Reset

This function is used to reset current device to factory settings.

Figure 3-25 Factory reset



Hardware Version

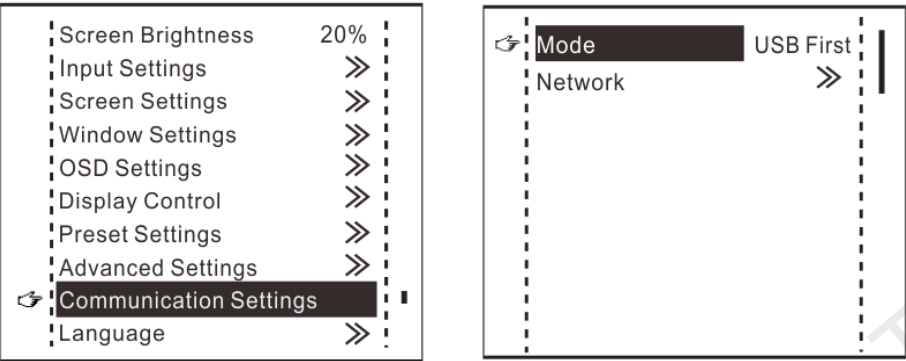
This function is used to check the hardware version of the VX6s. If a new version is released, you can log in to NovaLCT on the PC to update the firmware programs of the VX6s.

3.10 Communication Settings

This function is used to set the communication mode and network parameters.

Mode

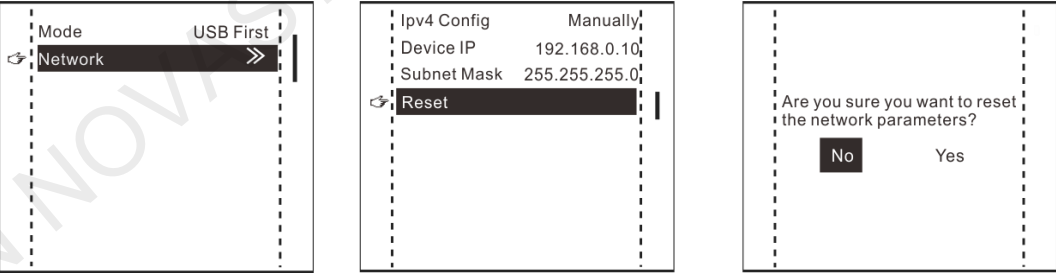
Figure 3-26 Communication mode



- **USB first**
When the VX6s is connected to the control computer via both the USB and Ethernet ports, if the communication mode is set as **USB First**, the control computer will communicate with the VX6s via the USB port.
- **LAN first**
When the VX6s is connected to the control computer via both the USB and Ethernet ports, if the communication mode is set as **LAN First**, the control computer will communicate with the VX6s via the Ethernet port.

Network

Figure 3-27 Network

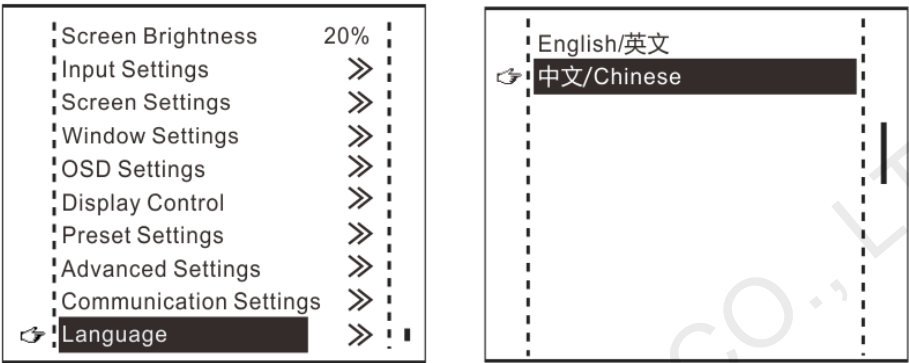


The network parameters can be set manually and automatically. When you set the network manually, the IP address of current device cannot conflict with IP addresses of other devices. You can use the **Reset** function to reset the **Device IP** and **Subnet Mask** values to the defaults.

3.11 Language

The UI language of VX6s currently supports Chinese and English. You can change the language freely as you need.

Figure 3-28 Language



4 USB Playback

Instructions on mouse operations:

1. Hold down the left mouse button on a media file to change the file order in the media list.
2. Click to confirm an operation.
3. Right-click to go back to the previous page.

By using the ViPlex MPlayer software supported by the Android platform of VX6s, you can play the media stored in the USB drive, set playback orders and sort the media.

Preparation




- Step 1 Insert the USB drive into the type-A USB port on the rear panel of the VX6s.
- Step 2 Connect the mouse to the VX6s via the type-A USB port on the rear panel.
- Step 3 Set the input source of current window to **USB**.
- Step 4 Connect the monitor screen to the DVI connector in the **OUTPUT** area of the VX6s.

Playing Media

- Step 1 Click the ViPlex MPlayer icon to start the player software.

The player will automatically read the files that can be played in the USB drive and then show the files under the **Disk1** tab.

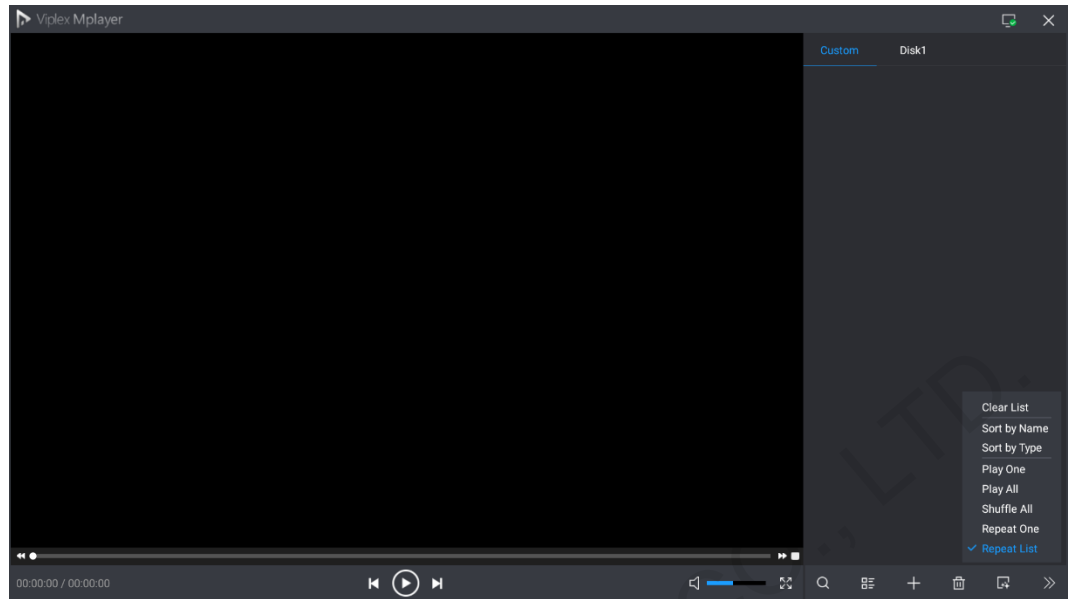
- Step 2 Click the **Disk1** tab to open the list of media in USB drive.
- Step 3 Click the media file you want to play and the media will be played.

- Click , select the files you want to delete, and then click **Delete Selected** to delete the selected files.
- Click  to select the transition effect for switching files.
- Click  to show more settings where you can clear the playback list, sort the media and set the playback order.

Note:

If the playback file is texts, the coded format of the texts must be ANSI codes.

Figure 4-1 More settings



Note:

When the USB drive is the input source, you can hold down the **USB** button on the front panel to enter the USB playback operation status. At this time, the four buttons in the **CONTROL** area of the front panel will all be lighted and can be used as playback operation buttons. When you press the pause button (namely the **WIN3** button), the content being played on LED screen will be paused.

When the input source is set as **USB**, the VX6s will automatically detect the files that can be played in the USB drive and then automatically play the files in full screen. Besides, the last playback settings are remembered.

5 Product Specifications

Input		
Connector	Quantity	Description
3G-SDI	2	Supports input resolutions up to 1920×1080@60Hz and downward compatibility.
USB	2	<ul style="list-style-type: none"> Connects to a USB flash drive to play video or picture files stored in the drive. Connects to a mouse.
DVI	2	VESA standard Supports input resolutions up to 1920×1200@60Hz and downward compatibility. Supports HDCP.
DVI LOOP	1	DVI loop output
HDMI	2	Supports input resolutions up to 1920×1200@60Hz and downward compatibility. Supports HDCP.
Output		
Connector	Quantity	Description
Ethernet	6	6 Ethernet outputs
DVI	1	A monitoring connector, which can be set to preview the editing image or monitor the PGM
Control		
Connector	Quantity	Description
Ethernet	1	Connects to the PC for communication, or to the network.
USB (Type-B)	1	The type-B USB port on front panel: <ul style="list-style-type: none"> Connects to the PC for device control. Used as the input for cascading devices

U-DISK	1	The type-A USB port on front panel: a reserved port
USB (Type-B)	1	The type-B USB port on rear panel <ul style="list-style-type: none"> • Connects to the PC for device control. • Used as the input for cascading devices
USB (Type-A)	1	The type-A USB port on rear panel: used as the output for cascading devices
Overall Specifications		
Connector	Quantity	Description
Power	1	AC 100 V–240 V 50/60 Hz
Power consumption		
Operating temperature		-20°C–60°C
Dimensions		1U standard chassis
Weight		