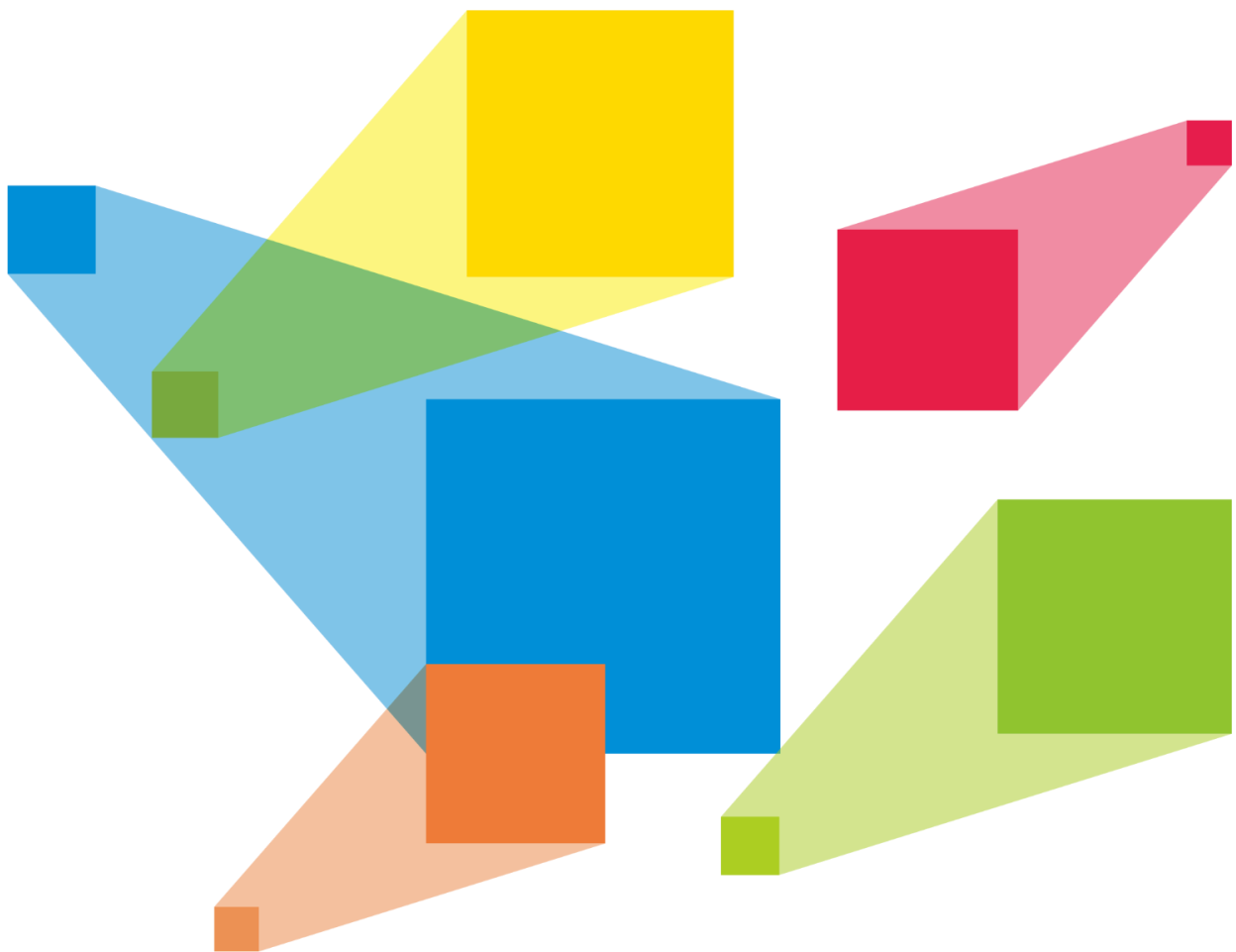


VC24

All-in-One Controller



User Manual

Change History

Document Version	Release Date	Description
V1.0.0	2023-10-18	First release

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1 Overview

1.1 Introduction

The VC24 is NovaStar's new all-in-one controller that integrates video processing and video control into one box. It features 24 Ethernet ports. A VC24 unit can drive up to 15.6 million pixels, with the maximum output width and height up to 16,384 pixels and 8192 pixels respectively, which is ideal for on-site extra-wide and extra-high LED screen control applications.

The VC24 is capable of receiving a variety of video signals and processing 10-bit videos. It supports up to 6+1 4K×2K@60Hz video signal inputs. In addition, the device features 6 independent windows, output scaling, pixel-level brightness and chroma calibration and more, to present you with an excellent image display experience.

The VC24 is designed with an industrial-grade casing. Thanks to its powerful video processing and sending capabilities and other outstanding features, the VC24 is a perfect fit for large-scale fixed installation applications in governments, enterprises, military command centers and more.

1.2 Features

- A comprehensive range of input connectors
 - 1x HDMI 2.0
 - 1x DP 1.2
 - 4x HDMI 1.3
 - 1x 3G SDI (IN+LOOP, optional)
- More outputs, larger loading capacity
 - 24x Gigabit Ethernet ports
 - A single device unit drives up to 15.6 million pixels, with a maximum width of 16,384 pixels and a maximum height of 8192 pixels.
- 3D function
 - Work with the EMT200 3D emitter and matched 3D glasses to present a 3D visual experience. The device output capacity will be halved after the 3D function is enabled.
- Audio input and output
 - Audio input accompanied with HDMI and DP sources
 - 3.5 mm independent audio input and output

- Personalized image scaling

Supports three kinds of image scaling modes, including full screen, pixel to pixel and custom.

- Multiple window display

- Supports 2x 4K×2K+4x 2K×1K windows.
- Adjustable window size and position
- Adjustable window priority

- OSD settings

- Supports one OSD display.
- Up to 6 OSD can be imported and saved.
- Supports OSD image and OSD text.

- BKG settings

BKG image does not occupy the window resources.

The max. width or height of a BKG image is up to 8192 pixels.

- Powerful video processing

- Based on SuperView III image quality processing technologies to provide stepless output scaling.
- One-click full screen display
- Free input cropping

- EDID management

EDID Supports custom EDID and standard EDID.

- Color adjustment

Supports output color management, including brightness, saturation, contrast and hue.

- Easy preset saving and loading

- Up to 10 user-defined presets supported
- Load a preset by simply pressing one button.
- Delete, overwrite, save and copy a preset.

- Hot backup

- Device backup
- Ethernet port backup

- Output synchronization

Use an internal input source as the sync source to make the output images of all the device in synchronous display.

- Pixel level brightness and chroma calibration

Work with NovaLCT and NovaStar calibration software to support brightness and chroma calibration on each LED, which can effectively remove color discrepancies and greatly improve LED display brightness and chroma consistency, allowing for better image quality. The function of displaying image on screen for test is also supported.

- Multiple operation modes

Control the device as you wish via V-Can, NovaLCT or device front panel knob and buttons.

- Free layout

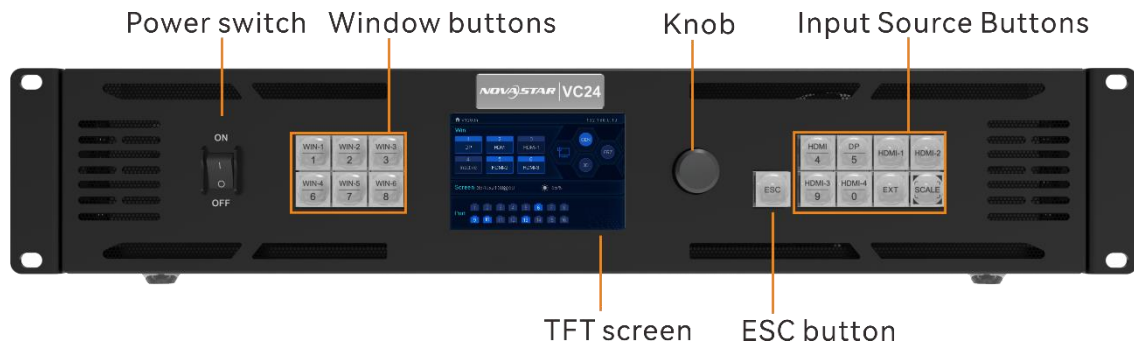
The receiving card that is left blank is not calculated, and the constraint

of rectangular load capacity calculation is eliminated. The used loading capacity is calculated according to the cabinets that are actually loaded.

*Please contact our technical support staff to obtain the receiving card models which support this function.

2 Appearance

2.1 Front Panel



Button	Description
Power switch	Power on or power off the device.
Window buttons	- When the window is closed, press the button to open the window and enter the corresponding window settings screen. - When the window is opened, press the button to enter the corresponding window settings screen. - When the window is opened, hold down the button to close the window. Status LEDs: - On: The window is opened. - Off: The window is closed. - Flashing: The window is being edited. Note: The input source of window 3, window 4, window 5 or window 6 cannot be switched to HDMI 2.0 or DP 1.2.
TFT screen	Display the device status, menus, submenus and messages.
Knob	- Rotate the knob to select a menu item or adjust the parameter value. - Press the knob to confirm the setting or operation.
ESC button	Exit the current menu or cancel the operation.
Input source buttons	Show the input source status and switch the window input source. - On: An input source is accessed. - Flashing: The input source is not accessed but used by the window.

- Off: The input source is not accessed.

Note:

On the home screen, when window 1 is opened, you can press the input source button to quickly switch the input source for window 1.

- SCALE: A shortcut button for the full screen function. Press the button to make the window of the lowest priority fill the entire screen.

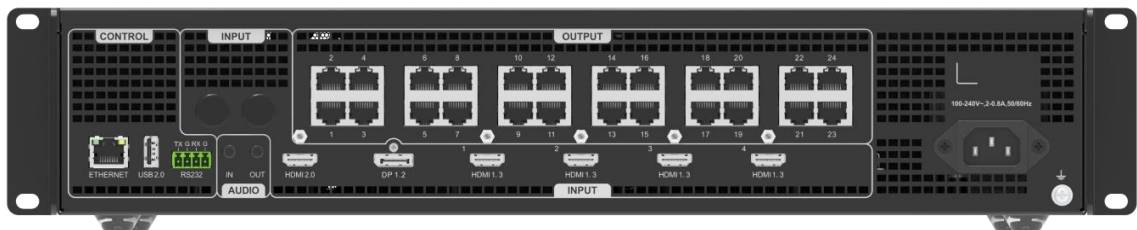
Status LEDs:

- On: Full screen scaling is turned on.
- Off: Full screen scaling is turned off.

Note:

Hold down the knob and **ESC** button simultaneously for 3s or longer to lock or unlock the front panel buttons.

2.2 Rear Panel



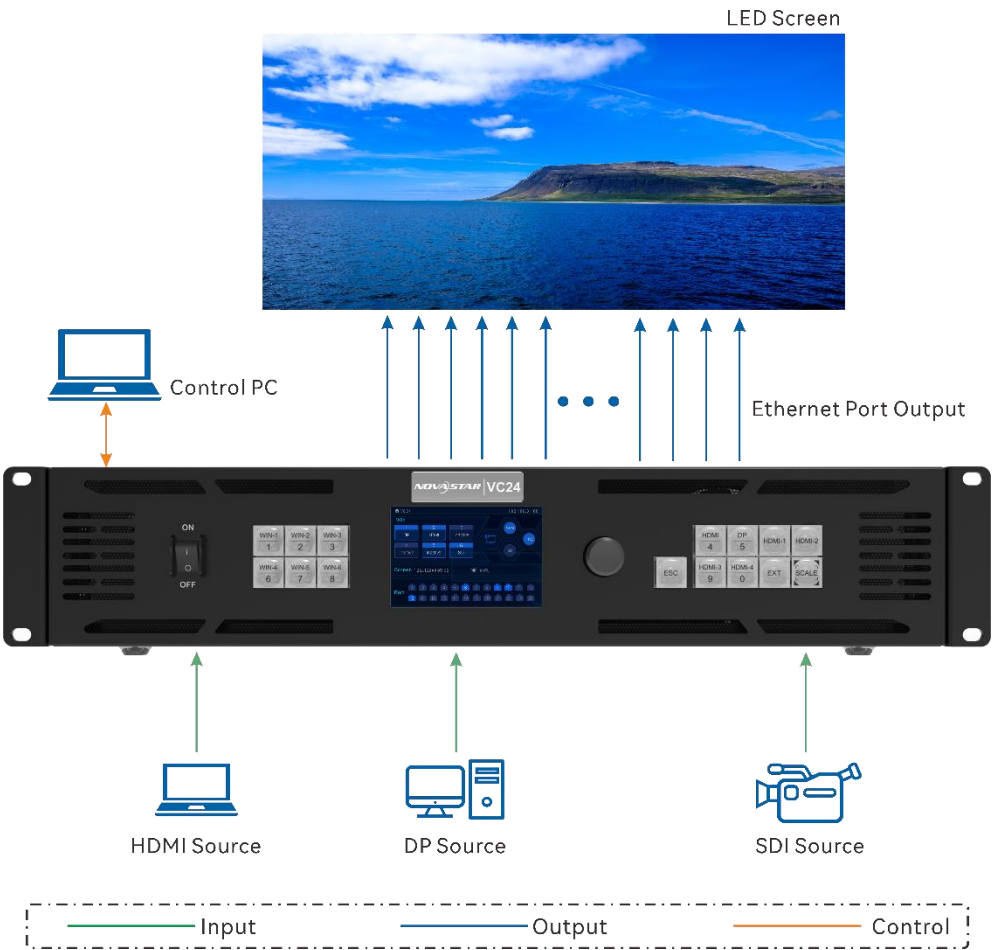
*The picture shown is for illustration purpose only. Actual product may vary due to product enhancement.

Input Connectors		
Connector	Qty	Description
HDMI 2.0	1	1x HDMI 2.0 • Max. input resolution: 4K×2K@60Hz or 8K×1K@60Hz • Custom resolutions supported - Max. width: 8192 pixels - Max. height: 8192 pixels • HDCP 1.4 and HDCP 2.2 supported • Accompanied audio supported • Does NOT support interlaced signal inputs.
DP 1.2	1	1x DP 1.2

		• Max. input resolution: 4K×2K@60Hz or 8K×1K@60Hz • Custom resolutions supported Max. width: 8192 pixels Max. height: 8192 pixels • HDCP 1.3 compliant • EDID management supported • Accompanied audio supported • Does NOT support interlaced signal inputs.
HDMI 1.3	4	4x HDMI 1.3 • Max. input resolution: 2K×1K@60Hz • Custom resolutions supported Max. width: 2048 pixels Max. height: 2048 pixels • HDCP 1.4 compliant • Accompanied audio supported • Does NOT support interlaced signal inputs.
3G-SDI	1	• 1x 3G-SDI (optional) • ST-424 (3G), ST-292 (HD) and ST-259 (SD) standard video inputs supported • Max. input resolution: 1920×1080@60Hz • Interlaced signal input and deinterlacing processing supported • 3G-SDI loop output supported • Does NOT support input resolution settings.
Audio Connectors		
AUDIO	2	1x AUDIO input, 1×AUDIO output • 3.5 mm standard audio input and output connectors • Audio sampling rate up to 48 kHz
Output Connectors		
Connector	Qty	Description
Ethernet ports	24	Gigabit Ethernet ports • Max. loading capacity: 15.6 million pixels Max. width: 16,384 pixels Max. height: 8192 pixels

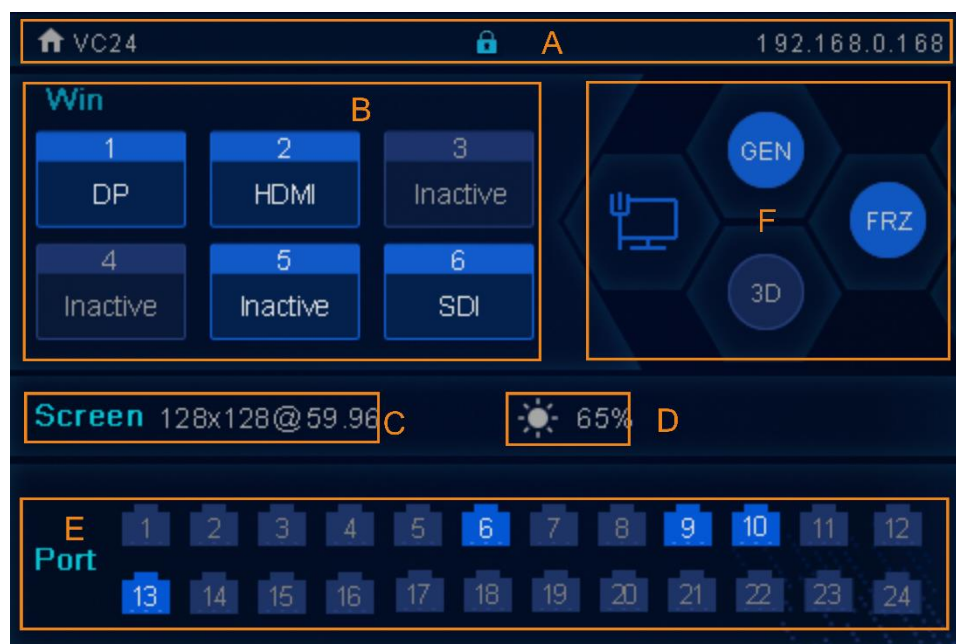
		• A single port loading capacity: 650,000 pixels (input bit depth: 8bit, output frame rate: 60Hz) Note: Ethernet ports 1 and 2 support audio output. When you use a multifunction card to parse the audio, be sure to connect the card to Ethernet port 1 or 2.
Control Connectors		
Connector	Qty	Description
ETHERNET	1	Connect to the control PC for firmware update. Status LEDs: • The top left one indicates the connection status. – On: The port is well connected. – Flashing: The port is not well connected, such as loose connection. – Off: The port is not connected. • The top right one indicates the communication status. – On: The Ethernet cable is short-circuited. – Flashing: The communication is good and data is being transmitted. – Off: No data transmission
USB	1	Update the firmware via the USB drive.
RS232	1	Connect to the central control device.

3 Applications



4 Home Screen

Figure 4-1 Home Screen



Area	Icon	Meaning
A		The device name
		The device IP address
		- Hold down the knob and ESC button simultaneously to lock or unlock the front panel buttons. - After the buttons are locked, all the button operations will not take effect and the icon will appear. - After the buttons are unlocked, the icon will disappear.
B		WIN-1 is opened and used a DP source as the input source.
		The window is closed.
C		Displays the resolution and frame rate of the

Area	Icon		Meaning
			configured screen.
D			The screen brightness
E			The Ethernet port is connected.
			The Ethernet port is not connected.
			• The Ethernet port is not connected. • When at the bottom right flashes, there is data transmission on the port.
F	Synchronization		The sync function is enabled and the synchronization succeeded.
			The sync function is not enabled.
			The sync function is enabled and the synchronization is in progress.
			The sync function is enabled but the synchronization failed.
	Display control		The output is black.
			The test pattern is shown.
			The output image is displayed.
			The output image is frozen.
	Communication		The VC24 is communicating with the control PC via LAN.
			The VC24 is not connected to the control PC.
	3D		The 3D function is turned on.
			The 3D function is turned off.

5

Menu Operations

Note:

Knob:

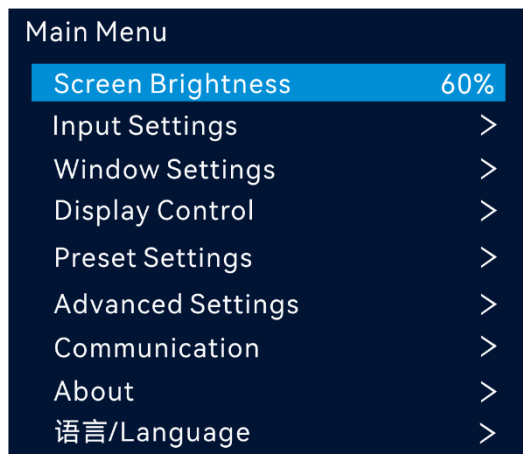
- On the home screen, press the knob to enter the main menu screen.
- On the main menu screen, rotate the knob to select a menu item, and press the knob to confirm the selection or enter the submenu.
- When a menu item with parameters is selected, you can rotate the knob to adjust the parameters. Press the knob again after adjustment to apply your settings.

ESC: Exit the current menu or cancel an operation.

5.1 Screen Brightness

Screen brightness allows you to adjust the LED screen brightness in an eye-friendly way according to the current ambient illuminance.

Figure 5-1 Screen brightness



Step 1 On the home screen, press the knob to enter the main menu screen.

Step 2 Select **Screen Brightness** and press the knob to confirm the selection.

Step 3 Rotate the knob to adjust the brightness value. You can see the adjustment result on the LED screen in real time. Press the knob to apply the brightness you set when you are satisfied with it.

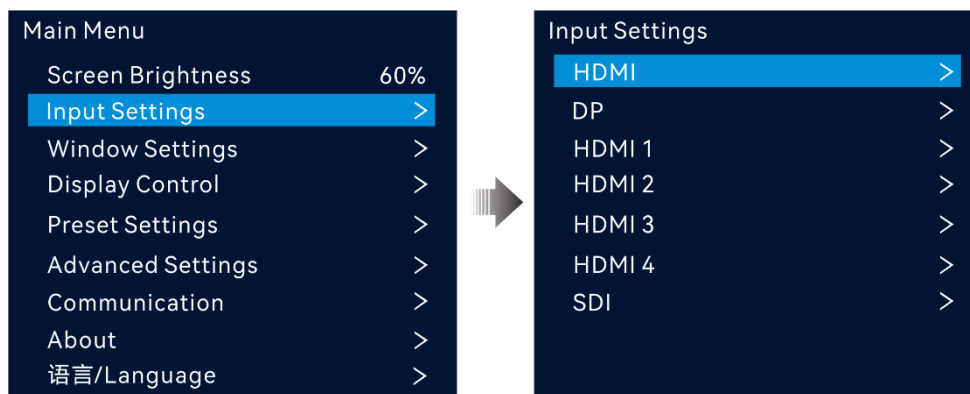
5.2 Input Settings

5.2.1 Input Source Selection

The supported input sources include HDMI 2.0, DP 1.2, HDMI 1.3 and 3G-SDI (optional).

Rotate the knob to select the desired input source and press the knob to enter the input source resolution setting screen.

Figure 5-2 Input settings



5.2.2 Input Resolution Settings

The following two methods are provided to set the input resolution:

- Standard resolution
- Custom resolution

Note:

The SDI input source does not support resolution settings.

Standard Resolution

Select a standard resolution and frame rate. Then rotate the knob to select **Apply** and press the knob to apply your settings.

Figure 5-3 Standard resolution

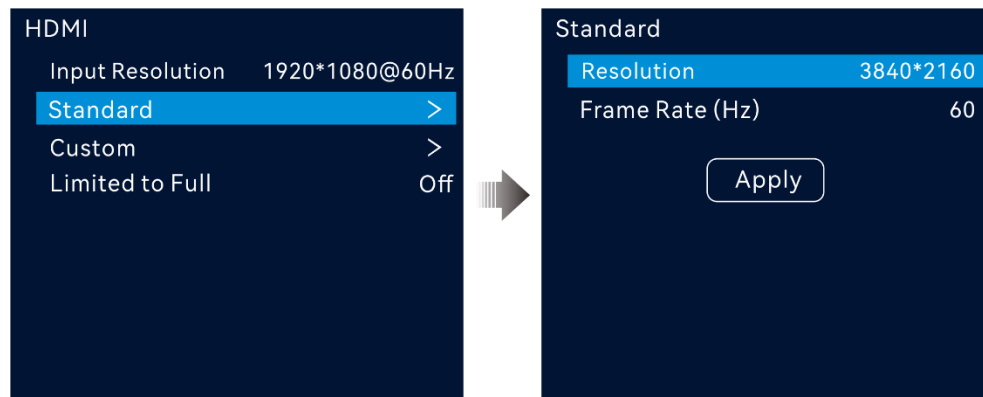


Table 5-1 Standard resolutions

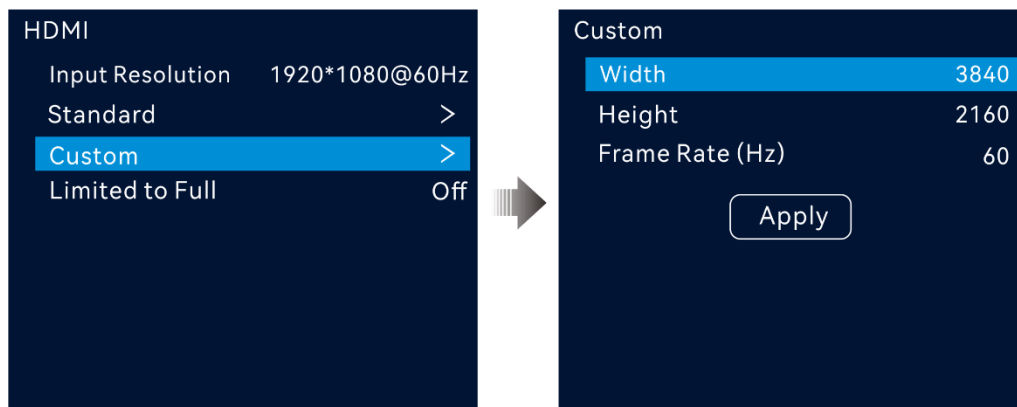
Standard Resolution	DP 1.2	HDMI 2.0	HDMI 1.3
1024×768@ (48/50/60/75/85) Hz	√	√	√
1280×720@ (24/25/30/48/50/60) Hz	√	√	√
1280×1024@ (48/50/60/75/85) Hz	√	√	√
1364×768@ (50/60) Hz		√	
1366×768@ (50/60) Hz	√		√
1440×900@ (60/75/85) Hz	√	√	√
1600×1200@ (48/50/60) Hz	√	√	√
1680×1050@60Hz	√	√	√
1920×1080@ (24/25/30/48/50/60) Hz	√	√	√
1920×1200@ (50/60) Hz	√	√	√
2048×1080@ (30/48/50/60) Hz	√	√	√
2048×1152@ (30/60) Hz	√	√	√
3840×1080@30Hz	√	√	
2560×1080@ (50/60) Hz	√	√	
2560×1600@ (50/60) Hz	√	√	
3840×1080@ (50/60) Hz	√	√	
3840×2160@ (24/25/30) Hz	√	√	

Standard Resolution	DP 1.2	HDMI 2.0	HDMI 1.3
2560×1600@120Hz	√	√	
3840×2160@ (50/60) Hz	√	√	
3840×1080@120Hz	√	√	
4096×2160@ (30/60) Hz	√	√	
7680×1080@ (30/60) Hz	√	√	
8192×1080@ (30/60) Hz	√	√	

Custom Resolution

Rotate the knob to set a custom width, height and frame rate. Then rotate the knob to select **Apply** and press the knob to apply your settings. If you do not press the knob to confirm, the settings will not take effect.

Figure 5-4 Custom resolution



5.2.3 RGB Limited to RGB Full

The VC24 can automatically convert the color space of the video source from RGB limited to RGB full, allowing for more accurate video processing.

- Off: Don't convert the color space of the current video source from RGB limited to RGB full.
- On: Convert the color space of the current video source from RGB limited to RGB full.
You are advised to turn on this function when the color space of the video source is RGB limited.

5.3 Window Settings

The VC24 supports 2x 4K×2K+4x 2K×1K windows which can be arranged as you wish and you can also set the window parameters as described in the following table.

Table 5-2 Window parameters

Menu	Description
Status	Open and close the current window
Input Source	Select an input source for the current window.
Scaling Mode	Three options are provided: Full Screen , Pixel to Pixel and Custom .
H Width	The horizontal width of the Window The range is 64~32768.
V Height	The vertical height of the Window The range is 64~32768.
Initial X	Set the horizontal distance between the top left corner of the Window and the top left corner of the screen. The range is -32768~32768.
Initial Y	Set the vertical distance between the top left corner of the Window and the top left corner of the screen. The range is -32768~32768.
Priority	Adjust the Window z-order. The greater the value, the more front the Window. The value ranges from 1 to 6. • 1: The Window locates at the bottom. • 6: The Window locates on the top.
Input Crop	Crop the input source image and display the cropped part on full screen. • Status: Turn on or turn off the cropping function. • H Width: The size of the cropped part in the horizontal direction • V Height: The size of the cropped part in the vertical direction • Initial X: Set the start position for the cropping in the horizontal direction. The value defaults to 0. • Initial Y: Set the start position for the cropping in the vertical direction. The value defaults to 0.

5.3.1 Add Windows

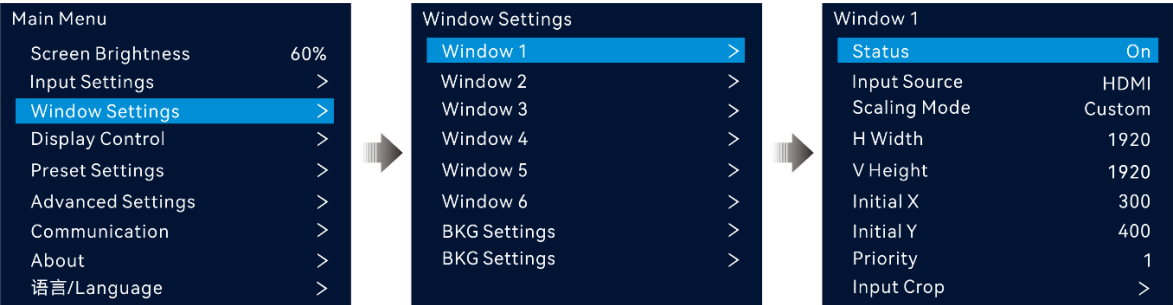
Button Operations

- Step 1 Press the window button in the **WINDOWS** area on the device front panel to quickly open the Window and the device screen displays the corresponding Window settings screen.
- Step 2 Press an input source button in the **SOURCE** area to quickly select an input source for the Window.

Menu Operations

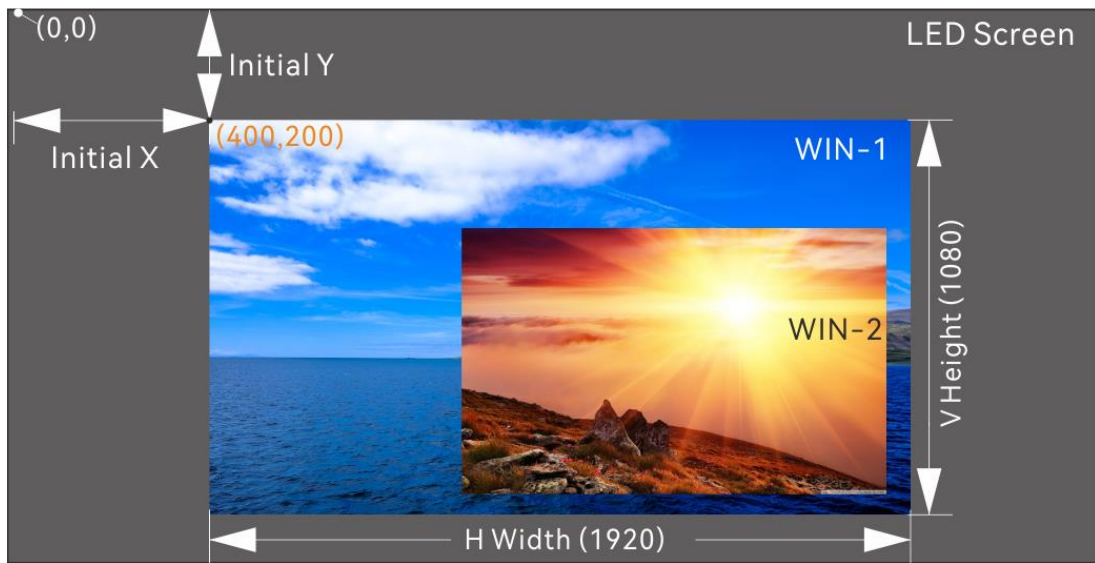
- Step 1 On the home screen, press the knob to enter the main menu screen.
- Step 2 Rotate the knob to select **Window Settings** and press the knob to enter the window settings screen.
- Step 3 Rotate the knob to select **Window 1**, **Window 2**, **Window 3**, **Window 4**, **Window 5**, or **Window 6** and press the knob to enter the corresponding settings screen.

Figure 5-5 Window settings



- Step 4 Select **Status** and press the knob to confirm. Rotate the knob again to select **On** and press the knob to confirm.
- Step 5 Rotate the knob to select Input Source and select the desired input source for the Window.
- Step 6 Rotate the knob to select other Window parameters and set them if needed. The Window parameter descriptions are shown in [Table 5-2](#) and [Figure 5-6](#) .

Figure 5-6 Window parameter descriptions



Step 7 Rotate the knob to select **Priority** and set the Window z-order.

5.3.2 Switch Window Input Sources

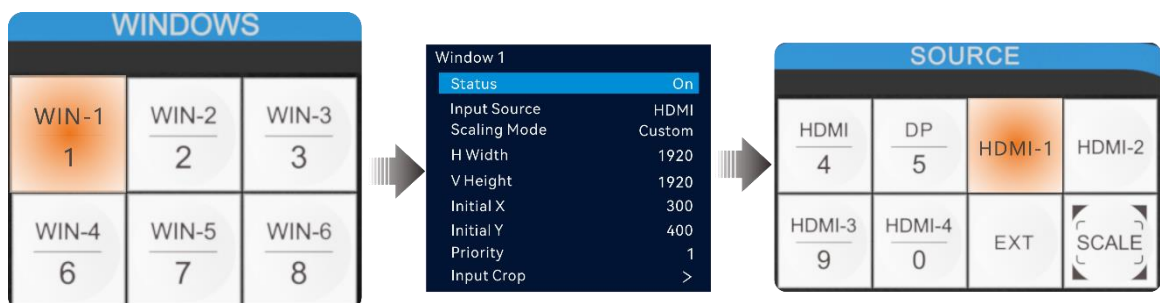
Button Operations

Step 1 Press the desired window button in the **WINDOWS** area on the device front panel to quickly open the Window and the device screen displays the corresponding Window settings screen.

After pressed, the Window button becomes flashing.

Step 2 Press an input source button in the **Source** area to quickly switch the Window input source.

Figure 5-7 Switch Window input sources



Notes:

- On the home screen, when window 1 is opened, you can press the input source button to quickly switch the input source for window 1.
- Press the **SCALE** button to make the bottom Window fill the whole screen quickly.

Menu Operations

- Step 1 On the home screen, press the knob to enter the main menu screen.
- Step 2 Go to **Window Settings > Window 1 / Window 2 / Window 3 / Window 4 / Window 5 / Window 6 > Input Source** to enter the input source settings screen.
- Step 3 Rotate the knob to select the target input source and press the knob to confirm.

Input Crop

This function allows you to crop the input source image and make the cropped part display on full screen.

- Step 1 On the home screen, press the knob to enter the main menu screen.
- Step 2 Go to **Window Settings > Window 1 / Window 2 / Window 3 / Window 4 / Window 5 / Window 6 > Input Crop** to enter the input source cropping screen.
- Step 3 Select **Status** and press the knob to confirm. Rotate the knob again to select **On** and press the knob to confirm.
- Step 4 Rotate the knob to select other cropping parameters and set them if needed. The cropping parameter descriptions are shown in [Table 5-2](#) and [Figure 5-9](#) .

Figure 5-8 Input crop

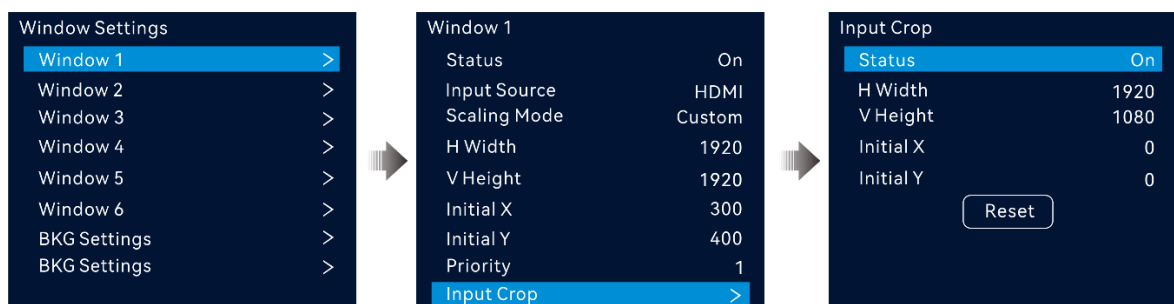


Figure 5-9 Input crop effect

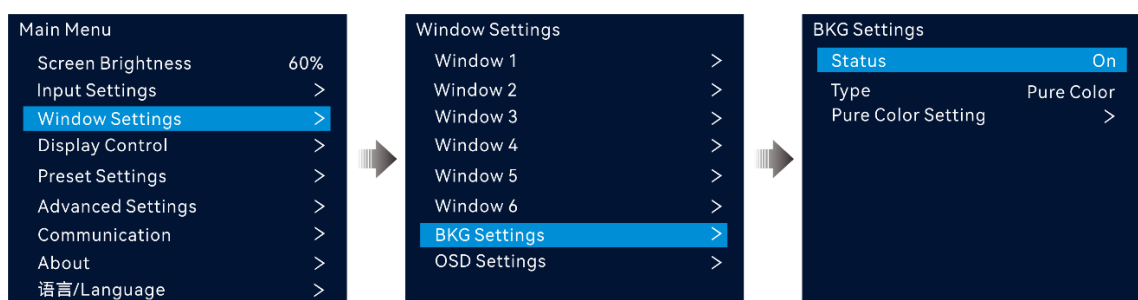


5.4 BKG Settings

The VC24 supports BKG settings. On the **Window Settings** screen, rotate the knob to select **BKG Settings** and press the knob to enter the **BKG Settings** screen.

- Step 1 Select **Status** and press the knob to confirm. Rotate the knob again to select **On** and press the knob to confirm.
- Step 2 Set the desired BKG type. The options include **Pure Color** and **Image**.
- When you set the BKG type to **Pure Color**, adjust the individual R, G or B value to set a pure color BKG.
 - When you set the BKG type to **Image**, select the BKG image saved in the control PC.

Figure 5-10 BKG settings



- Step 3 Press the knob to apply your settings.

Notes:

- Up to 4 BKG images can be imported. The max. width or height of a BKG image is up to 8192 pixels.
- Before you add a BKG, make sure you have imported the BKG images in V-Can.
- The BKG has the lowest priority and its priority cannot be changed.

5.5 OSD Settings

The VC24 supports at most 6 OSD. Each time only one OSD can be used. OSD has the highest priority which cannot be changed.

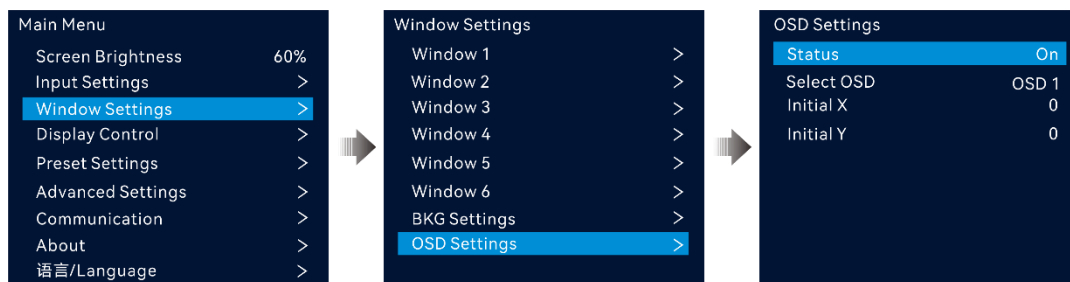
Before you add OSD, please make sure you have imported the OSD images or edited the OSD text in V-Can.

- OSD image size: Max. 4096×2160 or 8192×1080
- OSD image format: PNG, JPG, JPEG, BMP

Step 1 Press the knob to enter the main menu screen.

Step 2 Rotate the knob to select **Window Settings** > **OSD Settings** to enter the OSD settings screen.

Figure 5-11 OSD settings



Step 3 Perform the OSD-related settings as required.

Table 5-3 OSD parameters

Parameter	Description
Status	Turn on or turn off the OSD. The default options is Off .
OSD Select	The options include OSD1 , OSD2 , OSD3 , OSD4 , OSD5 and OSD6 . Note: Before you add OSD, please make sure you have imported the OSD in V-Can.

Parameter	Description
Initial X	The initial horizontal coordinate of the OSD The value ranges from 0 to 16384.
Initial Y	The initial vertical coordinate of the OSD The value ranges from 0 to 8192.

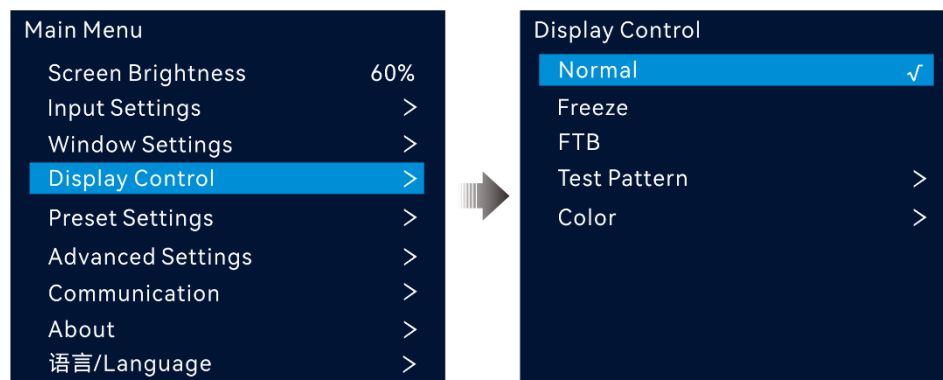
Notes:

- You cannot adjust the OSD size via the device front panel screen. If you do need to resize the OSD, please adjust it when you import it in V-Can.
- For the OSD text, you can set its text style and scrolling mode. These settings can only be carried out in V-Can.

5.6 Display Control

Rotate the knob to select Display Control and press the knob to enter the display control screen.

Figure 5-12 Display control



- Normal: Display the content of the current input source normally.
- Freeze: Freeze the current frame of the output image.
- FTB: Make the screen go black.
- Test Pattern: Test the display performance and working status of the LED screen.
Options on this menu include **Pure Color**, **Gradient**, **Grid**, **Brightness**, **Spacing** and **Speed**.
- Image Color: Adjust the color of the output image. You can see the adjustment result on the LED screen in real time.

Table 5-4 Image color parameters

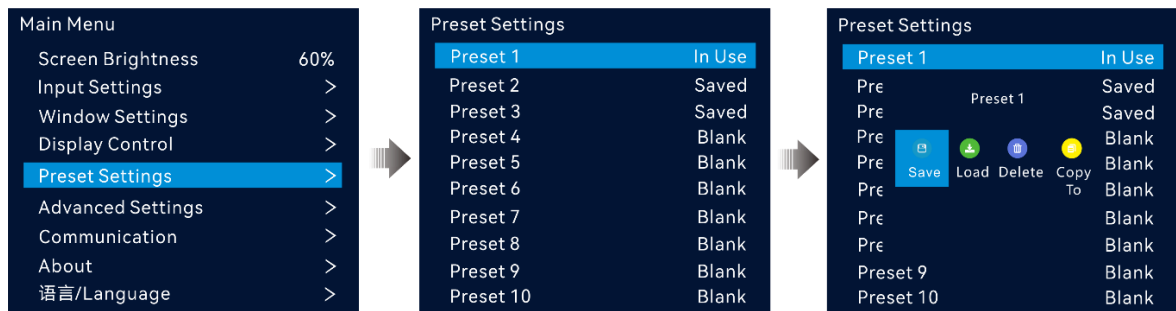
Parameter	Description
Brightness	The brightness value ranges from 0 to 100. The rotating stepping of the knob is 1.
Contrast	The contrast value ranges from 0 to 100. The rotating stepping of the knob is 1.
Saturation	The contrast value ranges from 0 to 100. The rotating stepping of the knob is 1.
Hue	The contrast value ranges from -180 to +180. The rotating stepping of the knob is 1.
Reset	Reset the image color parameters to the factory defaults.

5.7 Preset Settings

A preset is a set of parameters that save the Window and Window-related information. The VC24 supports ten user-defined presets. After a preset is saved, you can load the preset simply by its name. The preset operations include **Save**, **Load**, **Clear** and **Copy To**.

On the home screen, press the knob to enter the main menu screen. Rotate the knob to select **Preset Settings** and press the knob to enter the preset settings screen.

Figure 5-13 Preset settings



5.7.1 Save Presets

After the Window settings, you can save those settings as a preset.

- Step 1 On the preset settings screen, rotate the knob to select a preset.
- Step 2 Press the knob to open the preset operations window.
- Step 3 Rotate the knob to select **Save** and press the knob to save the Window settings to this preset.

After a preset is saved, the preset status on the right side changes to **Saved**.

5.7.2 Load Presets

This operation allows you to send a saved preset to an LED screen.

- Step 1 On the preset settings screen, rotate the knob to select a saved preset.
- Step 2 Press the knob to open the preset operations window.
- Step 3 Rotate the knob to select **Load** and press the knob to load the preset.

After a preset is loaded, the preset status on the right side changes to **In Use**.

5.7.3 Clear Presets

This operation allows you to clear the data saved in the preset. The preset name will not be cleared. After a preset is cleared, the preset status on the right side changes to **Blank**.

- Step 1 On the preset settings screen, rotate the knob to select a saved preset.
- Step 2 Press the knob to open the preset operations window.
- Step 3 Rotate the knob to select **Clear** and press the knob to open a confirmation window.

Step 4 Rotate the knob to select **Yes** and press the knob to clear the preset.

5.7.4 Copy Presets

This operation allows you to copy the Window data in a saved preset to another preset.

Step 1 On the preset settings screen, rotate the knob to select a saved preset.

Step 2 Press the knob to open the preset operations window.

Step 3 Rotate the knob to select **Copy To** and press the knob to go back to the preset settings screen.

Step 4 Rotate the knob to select the target preset and press the knob to confirm.

After the copying, the status of the target preset changes to **Saved**.

5.8 Advanced Settings

5.8.1 Device Backup

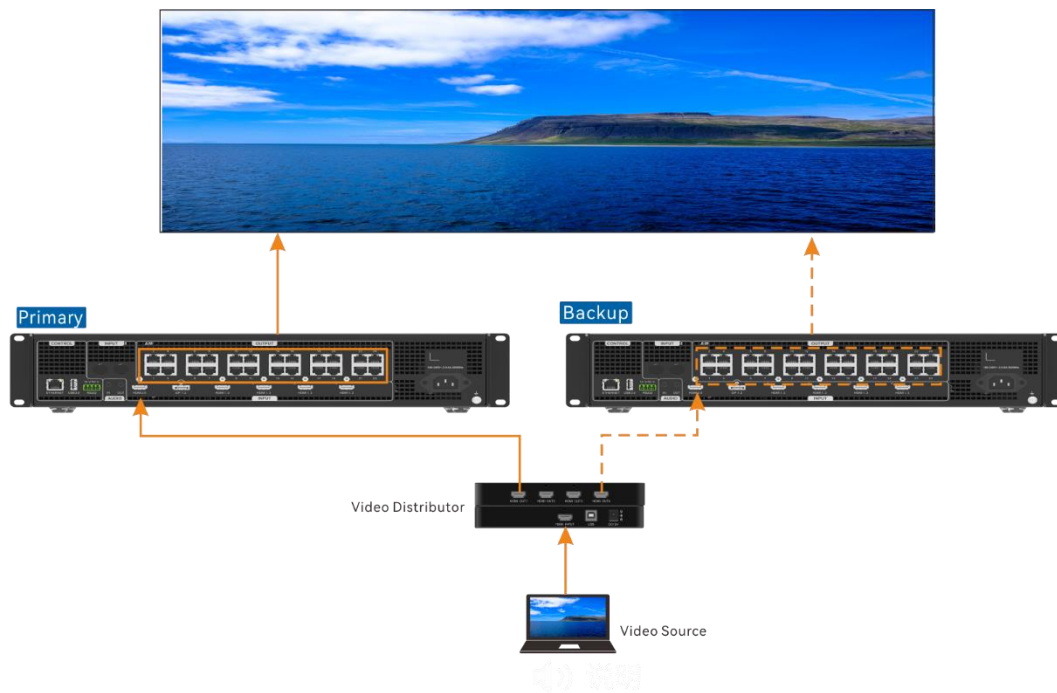
The VC24 supports both the backup between devices and Ethernet ports.

Backup Between Devices

Device backup allows you to set the backup relationship between two devices. You can set one of the devices as the primary device or the backup device. When the primary device has a problem or the primary device's Ethernet cable fails, the backup device will take over the responsibilities of the primary device seamlessly and continue to work well to ensure the LED screen will not go black.

- The connection diagram for the device backup:

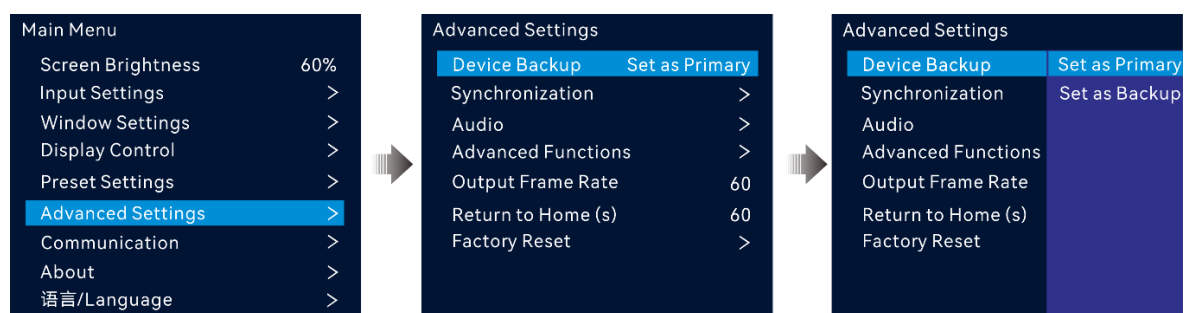
Figure 5-14 Device backup connection



- The setting procedure for the device backup:

Step 1 On the main menu screen, go to **Advanced Settings > Device Backup** to enter the device backup screen.

Figure 5-15 Device Backup



Step 2 Rotate the knob to select **Set as Primary**.

Follow the same procedure to set the other device as backup.

Notes:

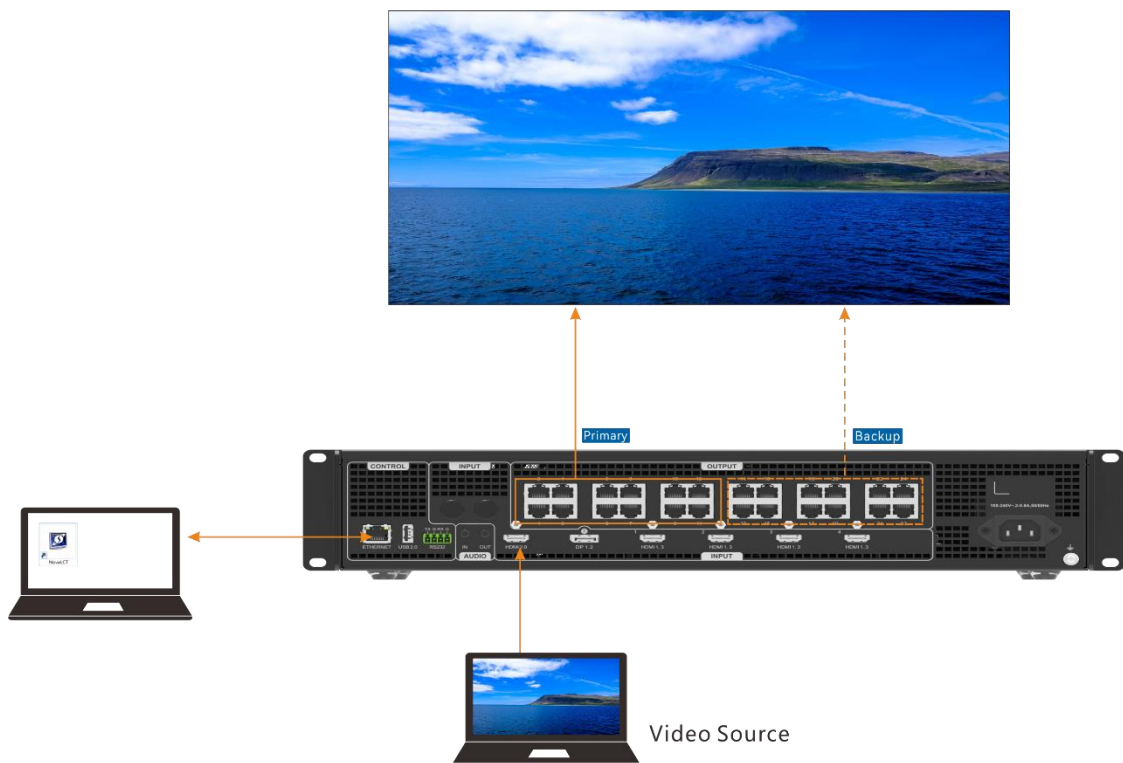
- In the device backup mode, the quantity of the cabinets loaded by each Ethernet port on both the primary and backup devices must be the same, but their data flow must be in a reversed way.
- The Windows and Window property settings on both the primary and backup devices must be the same.

Backup between Ethernet Ports

Ethernet port backup allows you to set the backup relationship between two Ethernet ports. When the primary port has a problem or the primary port's Ethernet cable fails, the backup port will take over the responsibilities of the primary port seamlessly and continue to work well to ensure the LED screen will not go black. When setting the backup between the Ethernet ports, you need to complete it in NovaLCT.

- The connection diagram for the Ethernet port backup:

Figure 5-16 Ethernet port backup connection



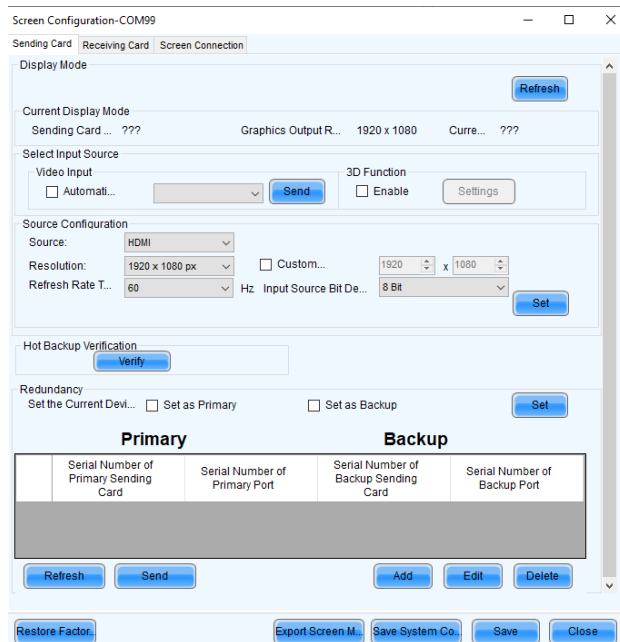
- The setting procedure for the Ethernet port backup:

Step 2 Run the NovaLCT software. On the menu bar, go to **User > Advanced Synchronous System User Login**. Enter the password and click **Login**.

Step 3 Click **Screen Configuration** to enter the screen configuration page.

Step 4 Click **Next** to enter the screen configuration page.

Figure 5-17 Screen configuration

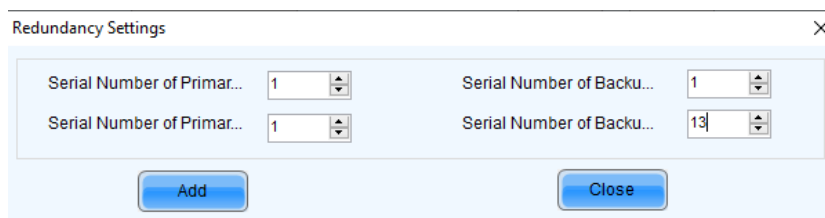


Step 5 Select the **Sending Card** tab, and then click **Add** in the Redundancy area.

Step 6 Set the serial numbers of both the primary device and backup device to **1**.

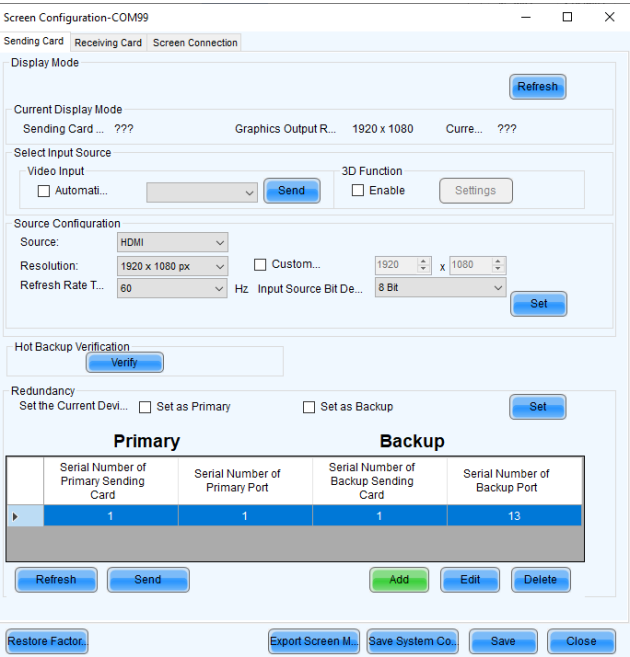
Step 7 Set the serial number of the primary port and the serial number of the corresponding backup port.

Figure 5-18 Ethernet port backup



Step 8 Click **Add** to complete the backup settings of an Ethernet port, and the system will automatically list the primary ports and backup ports.

Figure 5-19 Primary Ethernet ports



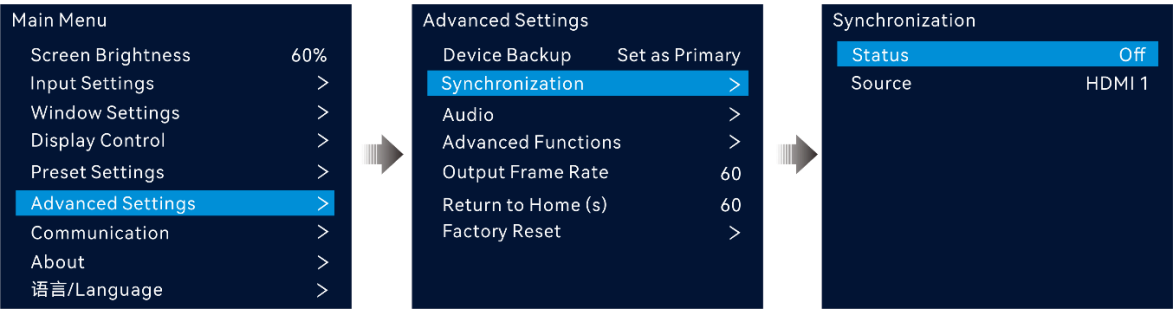
- Step 9 Repeat [Step 7](#) and [Step 8](#) to complete the backup settings for other Ethernet ports.
- Step 10 Click **Send** to send the redundancy information to the sending and receiving cards respectively.
- Step 11 Click **Save** to save the backup parameters to the sending and receiving cards respectively.

5.8.2 Synchronization

This function allows you to select a synchronization signal to synchronize all the cascaded device units or synchronize the primary and backup devices to display the output images of all the units in sync.

- Step 1 On the main menu screen, go to **Advanced Settings > Synchronization** to enter the synchronization settings screen.

Figure 5-20 Synchronization



- Step 2 Rotate the knob to select **Status** and press the knob to confirm. Rotate the knob again to select **On** and press the knob to confirm.
- Step 3 Rotate the knob to select **Source** and press the knob to confirm. Then rotate the knob again to select the desired sync source.

Note:

If two or more VC24 units load an LED screen, the sync sources used by each device must be the same.

5.8.3 Audio

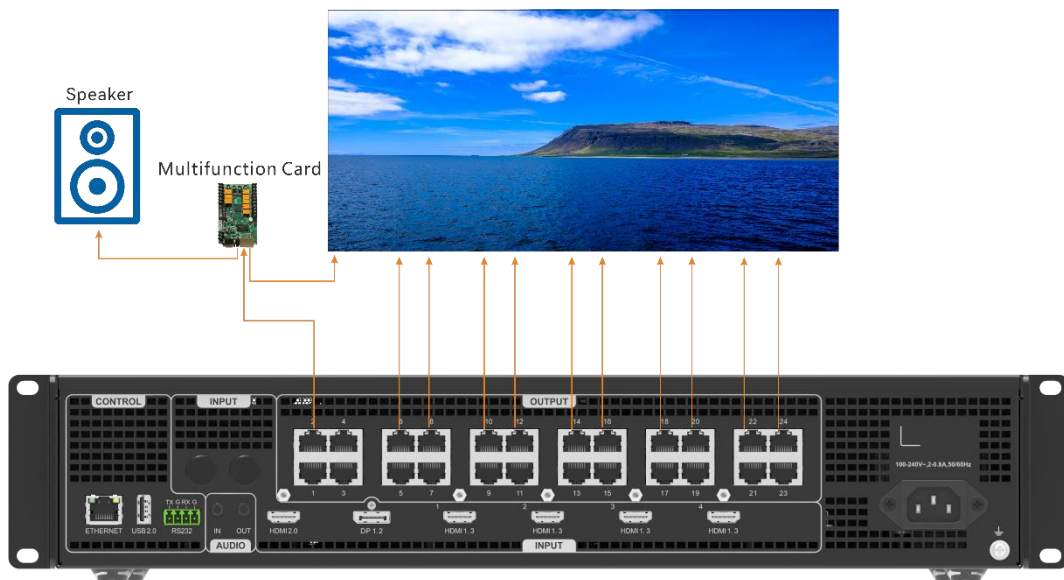
This function allows you to set the audio output, audio volume and input audio.

The audio connection methods are as follows.

- Via a multifunction card

Connect the Ethernet port 1 or 2 to a multifunction card, and then connect the multifunction card to an external speaker.

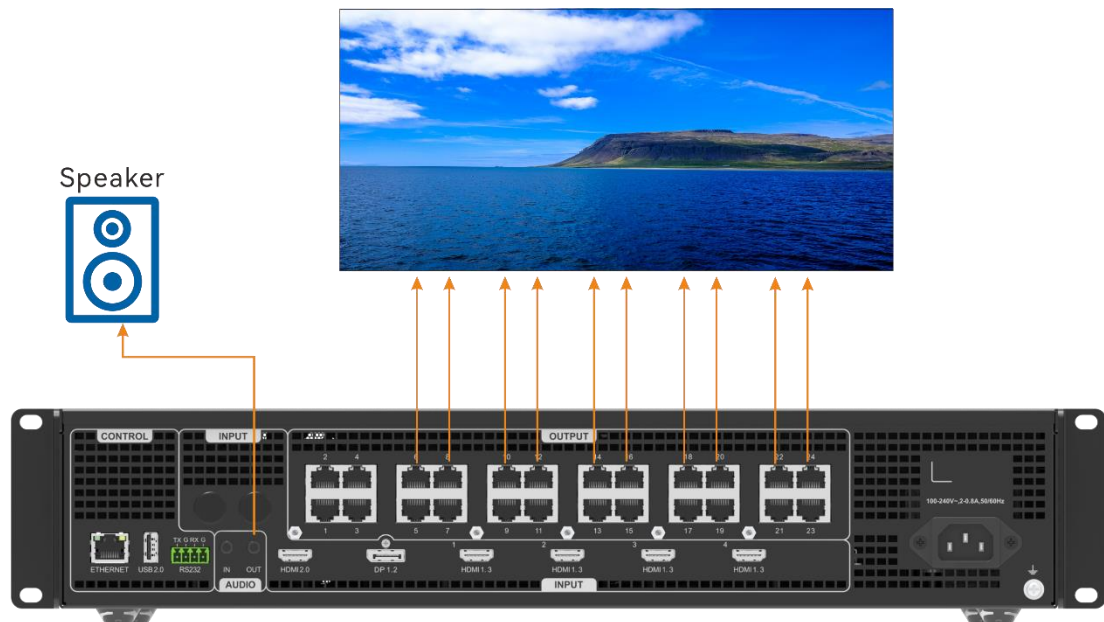
Figure 5-21 Audio output connection-1



- Via the audio output connector

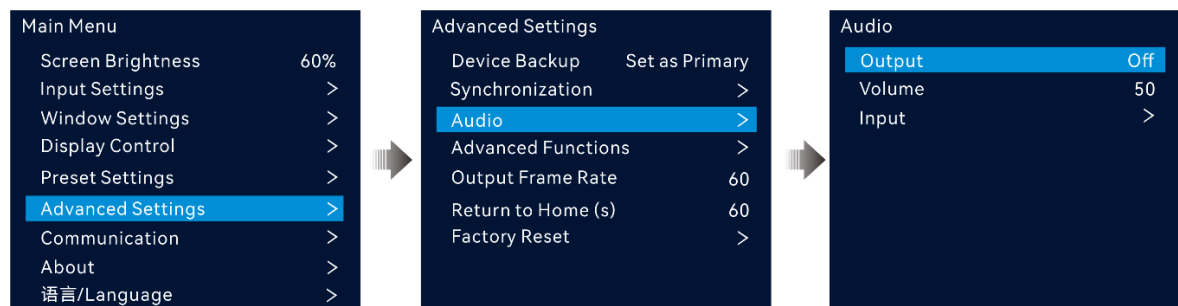
Connect the audio output connector to an external speaker.

Figure 5-22 Audio output connection-2



On the main menu screen, go to **Advanced Settings > Audio** to enter the audio settings screen.

Figure 5-23 Audio settings

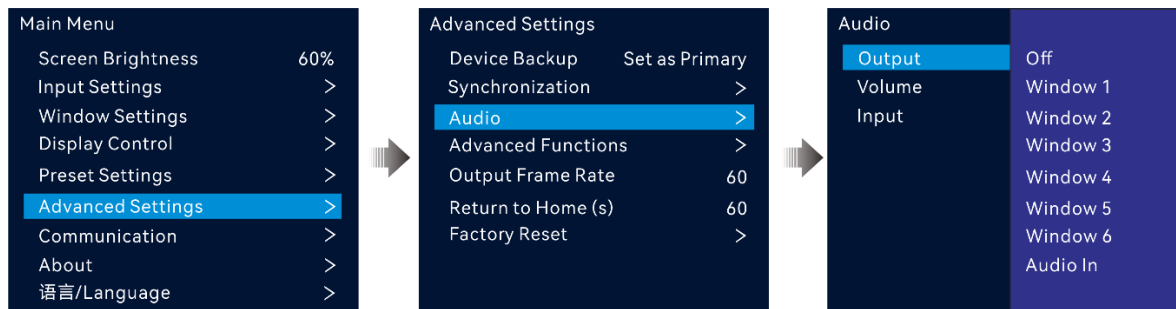


5.8.3.1 Output

Set to play which audio on the external speaker.

- Step 1 On the audio settings screen, rotate the knob to select **Output**.
- Step 2 Press the knob to open the available output list and rotate the knob to select where the output audio is from.

Figure 5-24 Audio output



- Off: Turn off the audio.
- Window 1/Window 2/Window 3/Window 4/Window 5/Window 6: Play the audio that comes with Window 1, Window 2, Window 3, Window 4, Window 5 or Window 6.
- Audio In: Play the audio that comes from the audio input connector, such as microphone or audio console.

Step 3 Press the knob to complete the selection.

5.8.3.2 Volume

Adjust the audio volume.

The value ranges from 0 (silent) to 100 (loudest) and defaults to 50.

On the audio settings screen, rotate the knob to select **Volume** and press the knob to confirm. Then rotate the knob again to adjust the audio volume and press the knob to confirm.

5.8.3.3 Input

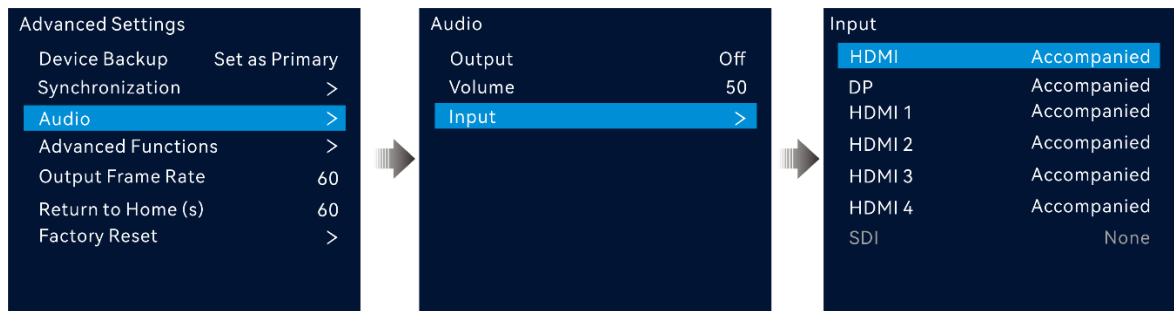
Set or change the input source audio.

- The HDMI connector comes with its own audio, and you can play the audio accompanied with the HDMI input source via the audio output connector.
- The SDI connector does not come with any audio, but you can set to play the audio from the audio input connector for the SDI input source.

Step 1 On the audio settings screen, rotate the knob to select **Input**.

Step 2 Press the knob to enter the input audio settings screen.

Figure 5-25 Input audio settings



Step 3 Rotate the knob to select the desired input source and press the knob to show the available audio input options.

- HDMI: The available options are **Accompanied** and **Audio In**.
 - Accompanied: Play the audio that comes with an HDMI input source.
 - Audio In: Play the audio from the audio output connector for the HDMI input source.
- DP: The available options are **Accompanied** and **Audio In**.
 - Accompanied: Play the audio that comes with a DP input source.
 - Audio In: Play the audio from the audio output connector for the DP input source.
- SDI: The available options are **None** and **Audio In**.
 - None: The SDI connector does not come with any audio. When **None** is selected, no audio will be played for the SDI input source.
 - Audio In: Play the audio from the audio output connector for the SDI input source.

Step 4 Rotate the knob to select the desired audio and press the knob to confirm.

5.8.4 Advanced Functions

Advanced functions include **3D** and **Diagnostics**.

5.8.4.1 Diagnostics

The diagnostics function helps you to diagnose the system and troubleshoot the malfunctioned device components.

When the device fails, you can run the diagnostics function to automatically test the device and the test result will be sent to our technical support staff for problem locating and processing.

For the daily maintenance, you can run the diagnostics function to do the routine health check for the system.

On the main menu screen, go to **Advanced Settings > Advanced Functions > Diagnostics** to enter the diagnostics screen.

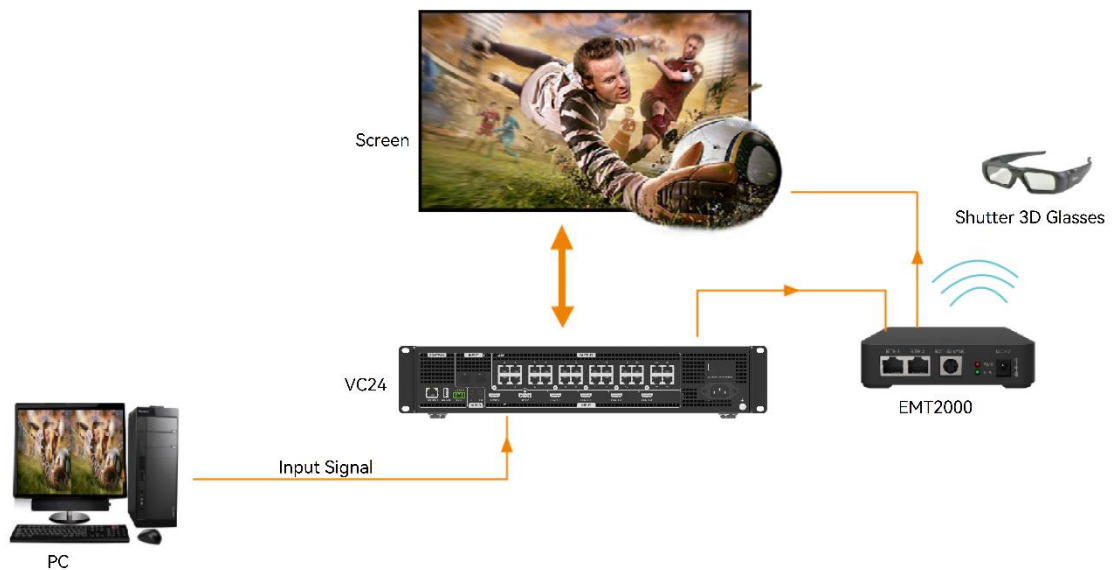
Note:

Running diagnostics will transiently disrupt the output, and the output will resume after the diagnostics is completed.

5.8.4.2 3D

The VC24 can work with the EMT200 3D emitter and 3D glasses to provide you with a 3D visual experience. For detailed operations, please refer to [A Instructions for the 3D Function](#).

Figure 5-26 Hardware connections

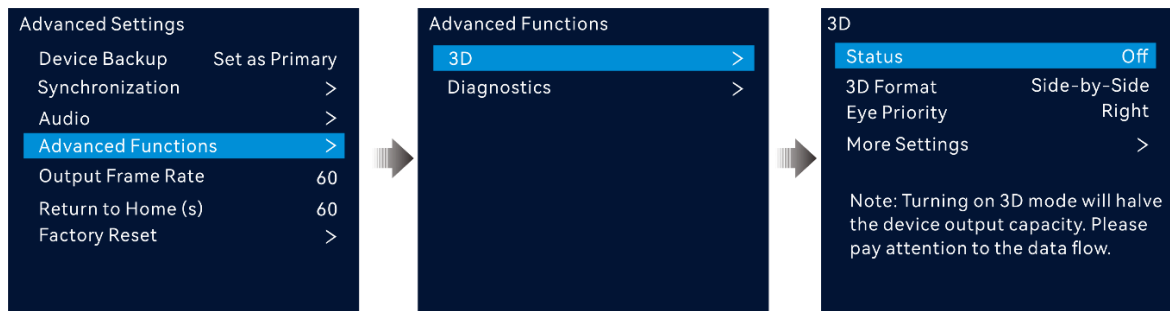


Step 1 Complete the hardware connections as shown in [Figure 5-26](#) .

Step 2 Press the knob to enter the main menu screen.

Step 3 Rotate the knob to select **Advanced Settings > Advanced Functions > 3D** to turn on the function.

Figure 5-27 3D

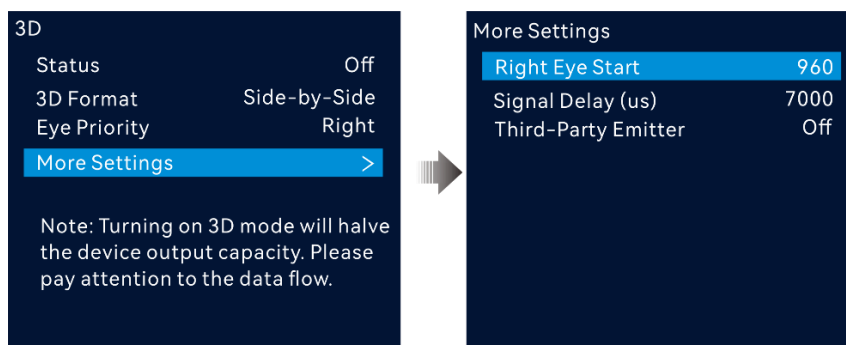


Step 4 Select the 3D format of the video source. The options include **Side-by-Side**, **Top-and-Bottom** and **Frame Sequential**.

Step 5 Set the eye priority. The options include **Left** and **Right**.

Step 6 Select **More Settings** to do the following settings.

Figure 5-28 More settings



- Right Eye Start
- Signal Delay (us)
- Third-Party Emitter

For more detailed operating procedure of the 3D function, see Instructions for the 3D Function.

Notes:

- Only window 1 supports the 3D function.
- Turning on the 3D function will halve the device output capacity.
- To enable pixel-to-pixel display of a 3D video source, set the Window width to the half of the resolution width of the 3D source if it is side-by-side, or set the Window height to the half of the resolution height of the 3D source if it is top-and-bottom.
- The 3D parameters can be saved in a preset. For detailed operations, please refer to [5.7 Preset Settings](#).

5.8.5 Output Frame Rate

This function allows you to set the frame rate of the output. The frame rate defaults to 60 Hz.

On the main menu screen, go to **Advanced Settings > Output Frame Rate**. Rotate the knob to select the desired frame rate and press the knob to confirm.

The supported frame rates include 24Hz, 25Hz, 30Hz, 48Hz, 50Hz, 56Hz, 60Hz, 70Hz, 72 Hz, 75 Hz, 85 Hz, 100 Hz and 120 Hz.

5.8.6 Return to Home (s)

You can set the period when the system stays at the current screen before returning to the homepage automatically when there is no operation performed. The value ranges from 60s to 3600s.

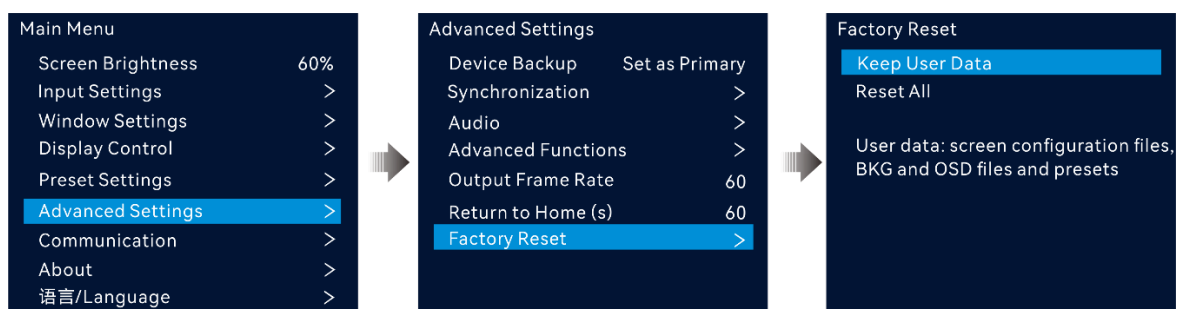
On the main menu screen, go to **Advanced Settings > Return to Home (s)** and press the knob to confirm. Rotate the knob to select the desired time value and press the knob to confirm.

5.8.7 Factory Reset

Factory reset function allows you to reset all the parameter settings of the device to factory defaults after the device update or when you think the parameters are improperly set.

On the main menu screen, rotate the knob to select **Advanced Settings > Factory Reset** and press the knob to enter the factory reset screen.

Figure 5-29 Factory reset



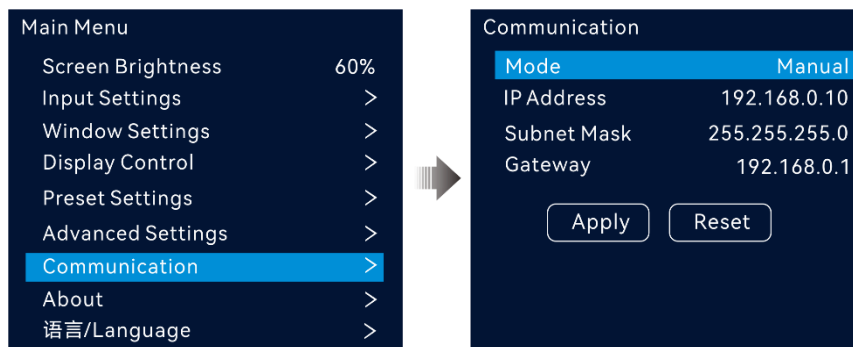
- Keep User Data: The use data includes the screen configuration files, BKG and OSD files and presets.
- Reset All: Reset all the parameter settings to factory defaults.

5.9 Communication Settings

You can set the network information to enable the device to communicate with the control PC smoothly. Make sure that the device and control PC are on the same network segment and the IP address of the device cannot conflict with that of the control PC.

- Step 1 On the main menu screen, rotate the knob to select **Communication** and press the knob to enter the communication settings screen.

Figure 5-30 Communication settings



- Step 2 Select **Mode** and press the knob to confirm.

The options include **Manual** and **Automatic**.

- Manual: Set the device IP address, subnet mask and gateway manually.
- Automatic: The system automatically assigns an IP address for the device. When the device and control PC are connected to the same router or switch, set this option to **Automatic**.

- Step 3 When the **Manual** option is selected, you must manually set the device IP address, subnet mask and gateway.

Rotate the knob to select **Apply** to make the settings take effect.

Note:

Rotate the knob to select **Reset** to reset the settings to defaults.

5.10 Language

The language options include English and Simplified Chinese. You can switch to your preferred language.

5.11 About

Under this menu item, you can view the firmware version, official website and email address. On our official website, you can check the latest device information and the updates for this device. You can also send your feedback or suggestion to us for improvements via the supplied email address.

On the main menu screen, rotate the knob to select **About** and press the knob to show all the information.

6 Specifications

Overall Specifications		
Electrical Specifications	Power connector	AC100V ~ 240V, 50/60Hz
	Power consumption	50 W
Operating Environment	Temperature	0°C to 50°C
	Humidity	0% RH to 80% RH, non-condensing
Storage Environment	Temperature	-20°C to +60°C
	Humidity	0% RH to 95% RH, non-condensing
Physical Specifications	Dimensions	482.6 mm × 315.0 mm × 94.6 mm
	Net weight	6.4 kg
	Gross weight	8.9 kg
	Noise level	41 dB (A)
Packing Information	Carton	535.0mm × 200.0mm × 430.0mm
	Accessories	1x Power cord 1x DP cable 1x HDMI cable 1x CAT5E Ethernet cable 1x Screwdriver 1x Phoenix connector 1x Certificate of Approval
	Packing size	550.0 mm × 215.0 mm × 440.0 mm

7 Video Source Feature

Input Connectors	Bit Depth		Max. Input Resolution
HDMI 2.0	8bit	RGB4:4:4	3840×2160@60Hz
		YCbCr4:4:4	
		YCbCr4:2:2	
		YCbCr4:2:0	
	10bit/12bit	RGB4:4:4	3840×2160@30Hz
		YCbCr4:4:4	3840×2160@60Hz
		YCbCr4:2:2	
		YCbCr4:2:0	
DP 1.2	8bit	RGB4:4:4	3840×2160@60Hz
		YCbCr4:4:4	
		YCbCr4:2:2	
	10bit/12bit	RGB4:4:4	3840×2160@30Hz
		YCbCr4:4:4	3840×2160@60Hz
		YCbCr4:2:2	
HDMI 1.3	8bit	RGB4:4:4	1920×1080@60Hz
		YCbCr4:4:4	
		YCbCr4:2:2	
	10bit	RGB4:4:4	1920×1080@60Hz
		YCbCr4:4:4	
		YCbCr4:2:2	
3G-SDI	• Max. input resolution: 1920×1080@60Hz • Does NOT support input resolution settings. • Supports ST-424 (3G), ST-292 (HD) and ST-259 (SD) standard video inputs.		

A

Instructions for the 3D Function

A.1 For a Single VC24 Unit

- Step 1 Select a 3D video source and connect it to the DP or HDMI connector of the VC24 unit.
- Step 2 Connect the VC24 unit to the EMT200 3D emitter and the LED screen in series via Ethernet cables. Then power on the EMT200 and turn on the shutter 3D glasses that come with the EMT200.
- Step 3 Configure the screen. Please note that turning on the 3D mode will halve the output loading capacity of a single Ethernet port and the whole unit.
- Step 4 Select the 3D video source format. Select **Side-by-Side**, **Top-and-Bottom** or **Frame Sequential** according to the actual video source format.
- Step 5 Adjust the eye priority. Since the left and right eye image switching manner of the video source may not be in sync with your shutter 3D glasses, you need to adjust the eye priority according to actual visual effect after the 3D mode is turned on. The default option is **Left**.
- Step 6 Adjust the right eye start.
- For a side-by-side 3D video source

If the resolution of the video source is 1920×1080@60Hz, set the right eye start to 960.
If the resolution of the video source is 3840×1080@60Hz, set the right eye start to 1920.
In conclusion, it is recommended you set the right eye start to the half of the video source width.
 - For a top-and-bottom 3D video source

If the resolution of the video source is 1920×1080@60Hz, set the right eye start to 540.
If the resolution of the video source is 3840×1080@60Hz, set the right eye start to 540.
In conclusion, it is recommended you set the right eye start to the half of the video source height.

- For a frame-sequential 3D video source, you do not need to adjust this parameter.

Step 7 Adjust the signal delay to keep the left-right eye switching of the 3D glasses and the LED screen in sync. It is recommended you adjust the signal delay according to the actual visual effect after the 3D mode is turned on.

Step 8 Turn on the 3D mode. Then only Window 1 is kept and other Windows are closed.

Step 9 Wear your 3D glasses to enjoy the 3D effect. No matter how the Window 1 size or position is adjusted, the 3D effect will not be affected at all.

A.2 Notes

1. Turning on the 3D mode halves the loading capacity of each Ethernet port and the VC24 unit.
2. It is recommended you stay at most 3 meters away from the EMT200 when using the 3D glasses.
3. The frame rate of the selected 3D video source should be higher than 60 Hz.

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