NovaPro UHD

All-in-One Controller
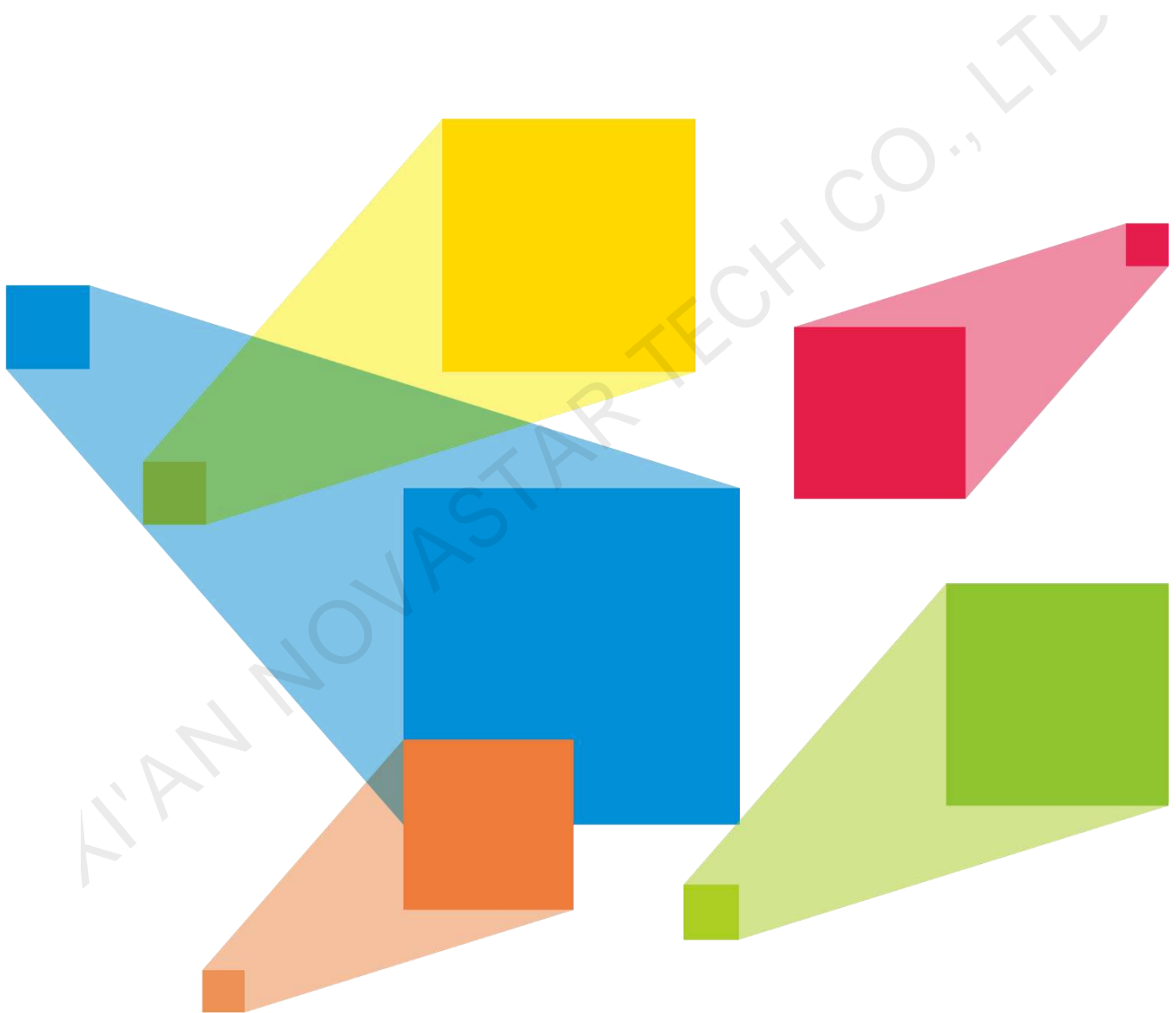
User Manual

Contents

1 Safety Instructions

1.1 Environmental Requirements

- Ensure adequate air flow in the equipment room.
- Take measures to prevent dust, water and static electricity.
- Avoid long-term direct sunlight.
- Do not place the equipment in a position near fire and heat.

- Do not place the equipment in an area containing explosive materials.
- Do not place the equipment in a corrosive environment.
- Do not place the equipment in a strong electromagnetic environment.

1.2 Operation Requirements

- Only trained technicians may repair the equipment.
- Save the packing boxes and materials for future storage and shipping of the equipment.
- Wear a wrist band and insulating gloves when touching ESD sensitive components.
- Handle the equipment with care at all times. Hold the handles or bottom of the equipment when you move it.
- Place the equipment in a stable position.
- Be careful not to drop anything into the equipment.
- Do not bundle the signal wires and the strong current wires or high voltage wires together.
- Avoid stacking of equipment. It is suggested that you leave 1U space between equipment, keep the cooling vents open and maintain a minimum distance of 10 cm between the vents and other objects.
- Keep the equipment away from conductors that attract lightning to avoid strike.
- Do not operate the equipment with excessive force.

- Do not make the boards contact with each other.
- Do not touch the board circuits, components, connectors or slots with bare hands.
- Do not repair the equipment by yourself. Please contact NovaStar for repair at any time.
- Only replace faulty parts with NovaStar-authorized replacement parts.
- Ensure that the equipment is well grounded. Make sure that the PE wire is in good condition and grounded. If the equipment has a grounding connector, connect it to the ground.
- Place the equipment in a stable position to prevent personal injury caused by dropping.
- Ensure that the wires are not exposed. Please repair or replace the wires in a timely manner if they are broken.
- Do not perform any equipment operation or cable connection outdoors in a thunderstorm.
- Do not wear watches, rings, or other metal jewelry when replacing faulty parts or repairing the equipment.

1.3 Personal Safety

- Ensure that the equipment is well grounded. Make sure that the PE wire is in good condition and grounded. If the equipment has a grounding connector, connect it to the ground.
- Place the equipment in a stable position to prevent personal injury caused by dropping.

- Ensure that the wires are not exposed. Please repair or replace the wires in a timely manner if they are broken.
- Do not perform any equipment operation or cable connection outdoors in a thunderstorm.
- Do not wear watches, rings, or other metal jewelry when replacing faulty parts or repairing the equipment.

1.4 Electrical Safety Labels

Label	Description
	The device is supplied by multiple power sources. Unplug all power cords after powering off the device.
	Electrical shock hazard

2   Overview

The NovaPro UHD is a new all-in-one controller developed by NovaStar. By integrating video processing, video control and LED screen configuration functions into one controller, this product is capable of receiving a variety of video signals, processing and sending images of resolutions up to Ultra HD 4K×2K@60Hz and 8K×1K@60Hz, and drives up to 10,400,000 pixels.

With built-in Master VI smart platform, the NovaPro UHD supports layer creation, property settings, and screen configuration by simple mouse, keyboard and monitor operations.

The NovaPro UHD can send the processed video to LED display through Neutrik Ethernet ports and OPT ports. Thanks to the powerful video processing and sending capabilities, this product is well suited for high-end rental applications, stage control systems and fine-pitch LED displays.

3   Appearance

3.1 Front Panel

Button	Function
On/OFF button	• Press the button to power on the device. • Hold down the button to power off or restart the device.
Layer buttons	• Layer operations: − Press a button to quickly add a layer. − Hold down an added-layer button to close the layer. • Status LEDs:

Button	Function
	− On (blue): The layer is open, and the input source is accessed normally. − Flashing (blue): The layer is being edited, and the input source is accessed normally. − On (white): The layer is open, but no input source is accessed. − Flashing (white): The layer is being edited, but no input source is accessed or the input source is abnormal. − Off: The layer is not added.
Input source buttons	• Input source operations: − Press a button to quickly access the input menu screen or switch the input source for the selected layer. • Status LEDs: − On (blue) for all number buttons: The number input function is enabled. − On (blue): The input source is accessed and in normal use. − On (white): The input source is accessed but not in use. − Off: No input source is accessed or the input source is abnormal.
TFT screen	Displays current device status, menus, submenus and messages.
Knob	• Press the knob to confirm the settings or enter the submenu. • Rotate the knob to select a menu item or adjust a parameter.
Function buttons	• Navigation button: Hold it down to enter or exit the quick navigation screen. • FTB: Make the LED screen to fade to black. • LOGO: Access the LOGO menu. • PRESET: Access the preset menu. • FREEZE: Freeze the output image displayed on LED screen. • OSD: Access the OSD menu. • FN: Custom function button. Press it to access the function menu and hold it down to customize the function for the button. • TEST: Access the test pattern menu. • BKG: Access the BKG menu. • TAKE: Send the PVW to PGM with a transition effect. A total of 16 transition effects are supported. • CUT: Send the PVW directly to PGM without a transition effect.
ESC button	Press the button to exit the current menu or cancel the operation.
USB ports	2x USB ports • Insert a USB drive to perform system update. • Connect a mouse or keyboard.

3.2 Rear Panel

Note:

The NovaPro UHD supports the replacement of the HDMI input card (standard configuration). You can buy a DVI input card to replace the HDMI input card.

Input		
Connector	**Quantity**	**Description**
12G-SDI	4	• Supports ST-2082-1 (12G), ST-2081-1 (6G), ST-424 (3G) and ST-292 (HD). • Up to 4K×2K@60Hz input resolution • Connector 4 supports deinterlacing processing. • Supports 12G-SDI output with loop-through. Note: When the input source is a 12G-SDI signal, a CANARE / L-4.5CHD+ / UHDTV-SDI SDI cable is required and it cannot be longer than 50 m.
DP 1.2	1	• Up to 4K×2K@60Hz (8K×1K@60Hz) input resolution • HDCP 1.3 compliant • Does not support interlaced input signals.
HDMI 2.0	1	• Up to 4K×2K@60Hz (8K×1K@60Hz) input resolution • HDCP 1.4 and HDCP 2.2 compliant • Does not support interlaced input signals. • Supports HDMI 2.0 output with loop-through.
HDMI 1.3	4	• D_4×HDMI 1.3 input card (can be replaced by a D_4×DVI input card) • Up to 1920×1080@60Hz input resolution for each connector • HDCP 1.3 compliant • Supports interlaced input signals.
Output		
Connector	**Quantity**	**Description**
Ethernet port	16	Gigabit Ethernet outputs • Max. loading capacity: 10.4 million pixels • Max. width: 16,384 pixels • Max. height: 8,192 pixels
OPT 1–4	4	10G fiber optical outputs (copy and hot backup) • OPT 1 transmits data on Ethernet ports 1–8. • OPT 2 transmits data on Ethernet ports 9–16.

		• OPT 3 is the copy/hot backup channel for OPT 1.
		• OPT 4 is the copy/hot backup channel for OPT 2.
MVR	1	HDMI 1.3 connector, used for Multiviewer to monitor input sources, PVM or PGM, or perform mixed monitoring
AUX	1	HDMI 1.3 connector, used for connecting to an auxiliary device such as a teleprompter
Control		
Connector	**Quantity**	**Description**
ETHERNET	1	For PC communication or network connection

USB	3	• 1x USB2.0 (Type-B): Connect to the PC for device debugging.
		• 2x USB2.0 (Type-A):
		  − Insert a USB drive to update the system.
		  − Connect to a mouse and keyboard.
		  − Output port for linking another device unit

GENLOCK IN-LOOP	1	Connect to a synchronization signal source. • IN: Accept the sync source. • LOOP: Loop the sync source.
CONTROL UI	1	Connect to a monitor for displaying the user interface of the Master VI platform software.

4 Applications

——— Input	——— Output	——— Control
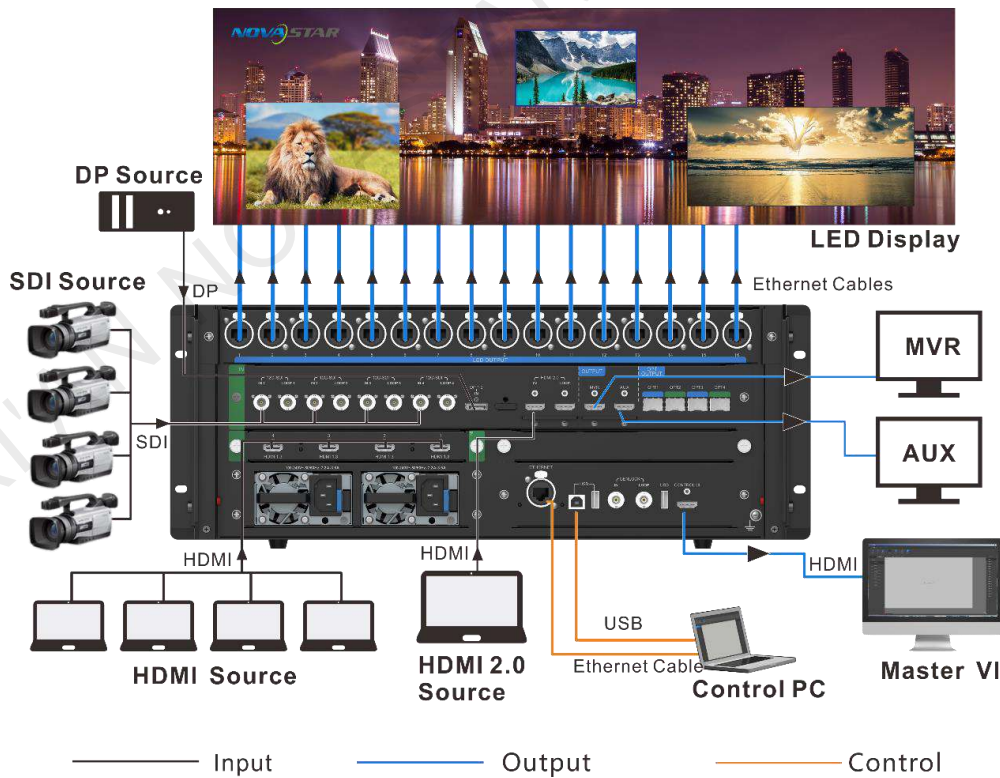
Note:

This product can be placed horizontally only. Do not mount vertically or upside-down.

The product can be mounted in a standard 19-inch rack capable of withstanding at least four times the total weight of the mounted equipment. Four M5 screws should be used to fix the product.

Link Control

The NovaPro UHD allows for linking of at most 4 device units. In link control mode, when you connect a monitor, mouse and keyboard to any of the device units, you can control each device unit independently through Master VI.

The connections are shown as follows.
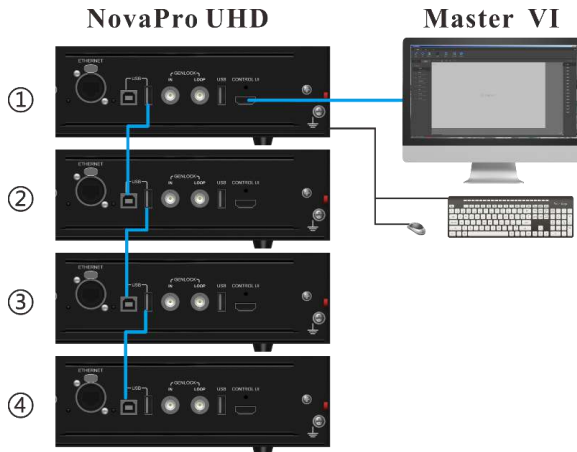
5 Menu Operations

Button Descriptions

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, rotate the knob to adjust the parameters. Please note that after adjustment, you need to press the knob again to confirm the adjustment.

ESC:

- Press the button to exit the current menu or cancel the operation.

- On the navigation screen, hold it down to exit the screen.

5.1 Home Screen

Figure 5-1 Home Screen

Area	Icon	Description
A	**6** SDI3 / **6** SDI-2	Display the layer number, status and input source. • Number: 6 • Status: Open or closed • Input source: SDI
B	Screen 1920x1080@59.96	Display the resolution of the configured screen.
C	☀ 65%	Display the screen brightness.
D	**1** / (port icon)	Display the device working mode and Ethernet port status. • Working mode: Primary • Ethernet port: Connected/Disconnected
	1 / (port icon)	Display the device working mode and Ethernet port status. • Working mode: Backup • Ethernet port: Connected/Disconnected − ◢ flashing: The backup port is enabled. − ◢ not flashing: The backup port is disabled.
	1	The Ethernet port of the fiber converter connected to the NovaPro UHD is connected to the LED screen.
E	Hot Backup 1 3 / 2 4 Hot Backup	Display the OPT mode and OPT port status. • Hot Backup: OPT mode: Hot backup OPT ports 3 and 4 back up the data on OPT ports 1 and 2. • Copy: OPT mode: Copy OPT ports 3 and 4 copy the data on OPT ports 1 and 2. • **2** / 2 : OPT port connected/disconnected
	Copy 1 3 / 2 4 Copy	
F	AUX HDMI	AUX function is turned on and AUX source is displayed.

Area	Icon	Description
G	AUX OFF	AUX function is turned off.
	Synchronization	Display the Genlock source connection status and Genlock function enabling status.
	GEN	• Bottom right **green**: The Genlock connector is connected. • **White** GEN text: The Genlock function is turned on.
	GEN	• Bottom right **green**: The Genlock connector is connected. • **Yellow** GEN text: The Genlock function is waiting to be turned on.
	GEN	• Bottom right **green**: The Genlock connector is connected. • The Genlock function is turned off.
	GEN	• Bottom right **gray**: The Genlock connector is disconnected. • The Genlock function is turned on.
	GEN	• Bottom right **gray**: The Genlock connector is disconnected. • The Genlock function is waiting to be turned on.
	GEN	• Bottom right **gray**: The Genlock connector is disconnected. • The Genlock function is turned off.
	HDR	HDR function is turned on.
	HDR	HDR function is turned off.
	USB drive	A USB drive is inserted and has been detected by the system.
		No USB drive is detected.
	Communication	The current communication mode is USB Preferred.
		The current communication mode is LAN Preferred.
		The device is not connected to the control PC.

5.2 Screen Brightness

Adjust the screen brightness in an eye-friendly way according to the current ambient brightness. The appropriate adjustment of screen brightness can also extend the service life of the LED screen.

Figure 5-2 Screen brightness

Menu	
Screen Brightness	60%
Screen Settings	>
Layer Settings	>
Input Settings	>
Preset Settings	>
Image Mosaic	>
Display Control	>
Advanced Functions	>

Step 1 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, and the LED screen will display the effect in real-time. Then press the knob to apply the brightness when you are satisfied with it.

5.3   Screen Settings

5.3.1   Quick Configuration

Preconditions

- LED screen must be a regular screen.

- Cabinets of the screen must be regular cabinets with the same resolution.

- The following data flow settings are supported. During data flow settings, you must ensure that the physical connection of each port is along the same direction and downward to next one.
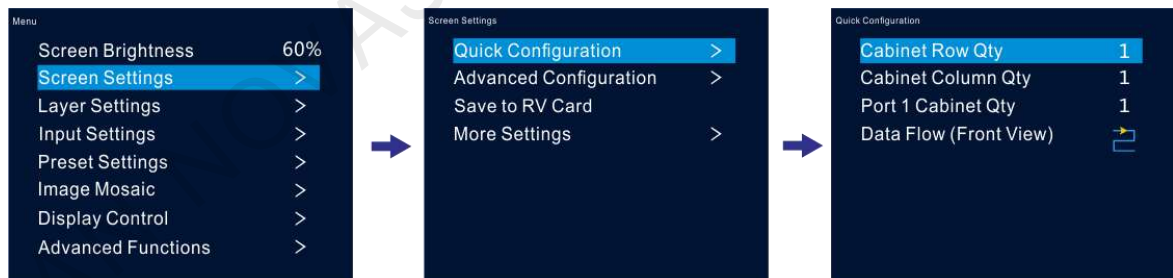
- During data flow settings, you must ensure that the Ethernet Port 1 is at the beginning position of the whole physical connection.

Procedure

Step 1   Power on the LED screen.

Step 2   Go to **Screen Settings** > **Quick Configuration**, and press the knob to enter the quick configuration screen.

Figure 5-3 Quick configuration

Step 3   Set **Cabinet Row Qty** and **Cabinet Column Qty** according to the actual row and column quantities of the cabinets.

Step 4   Select **Port 1 Cabinet Qty** to set the quantity of the cabinets loaded by Ethernet port 1.

Step 5   Select **Data Flow** and press the knob, then select an appropriate one.

Data flow is the physical cabinet connection pattern when viewed in front of the screen.

During data flow settings, you can view the real-time effects of different data flow settings on LED display by rotating the knob. When you are satisfied with the LED display image, press the knob to apply the settings.

5.3.2   Advanced Configuration

Set the cabinet row and column quantities, horizontal offset, vertical offset and data flow of the cabinets loaded by a single Ethernet port.

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

Step 2   Go to **Screen Settings** > **Advanced Configuration**, and press the knob to enter the advanced configuration screen.

Step 3   Turn on the advanced configuration function, and then set the cabinet row and column quantities, horizontal offset, vertical offset and data flow for the target Ethernet port.

Figure 5-4 Advanced configuration
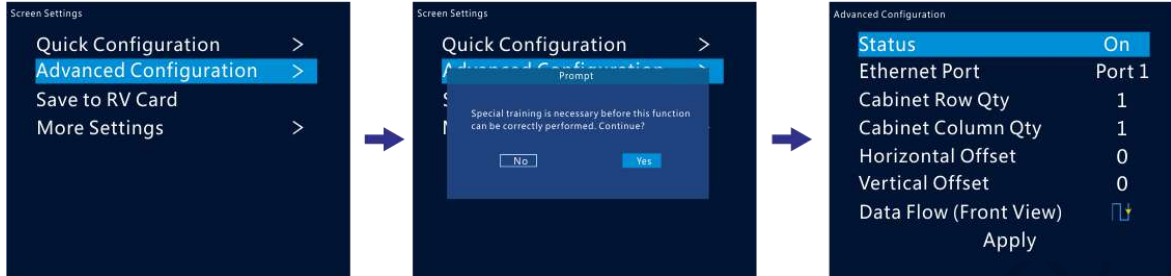
5.3.3   Save to RV Card

Send and save the screen configuration to the receiving card. The configuration data will not be lost after the device is powered off.

5.3.4   More Settings

Mapping

Mapping is used to show the relations between the cabinets of LED screen and the sending devices. You can view or check the connections between the cabinets.

Note:

This function is only applicable to the receiving cards that are connected to the NovaPro UHD support the mapping function. For the related receiving card information, please visit our official website www.novastar.tech.

Figure 5-5 Mapping

P:05 indicates the Ethernet port number of the sending device.

#001 indicates the number of the cabinet loaded by the Ethernet port.

Load RCFGx Files

After the LED screen is powered on, if a certain cabinet or the entire LED screen is not lit, you can save the receiving card configuration files (*.rcfgx) that have been configured on NovaLCT software to the USB drive, and then load the files from the USB drive.

Figure 5-6 Loading RCFGx files

Note:

The NovaPro UHD does not support importing the configuration files by directly connecting to NovaLCT.

LED Screen Color

Adjust the color temperature and Gamma value of LED screen to make the images displayed on the screen more clear and vivid.
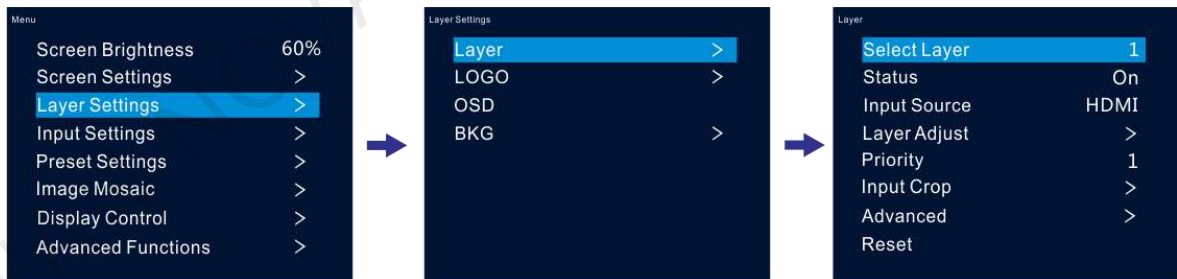
- Color Temperature: Adjust the cool or warm degree of images displayed on LED screen.

- Gamma: Adjust the image distortion degree from the input to output. The greater the value is, the more distorted the image will be. The value ranges from 0.25 to 4.00.

5.4 Layer Settings

5.4.1 Layer

5.4.1.1 Layer Properties

Figure 5-7 Layer properties

Menu	Description
Select Layer	Select the desired layer. At most 6 layers are supported. Note: Press a number button in the **LAYER** area on the device front panel to enter the layer settings screen and open the selected layer.
Status	Open or close the layer.
Input Source	Select the input source for the selected layer. Note: Press an input source button in the **SOURCE** area on the device front panel to quickly select an input source for the layer.
Layer Adjust	Adjust the aspect ratio, size and other parameters of the layer. • Aspect Ratio: Set the proportional relationship between the layer's width and height.

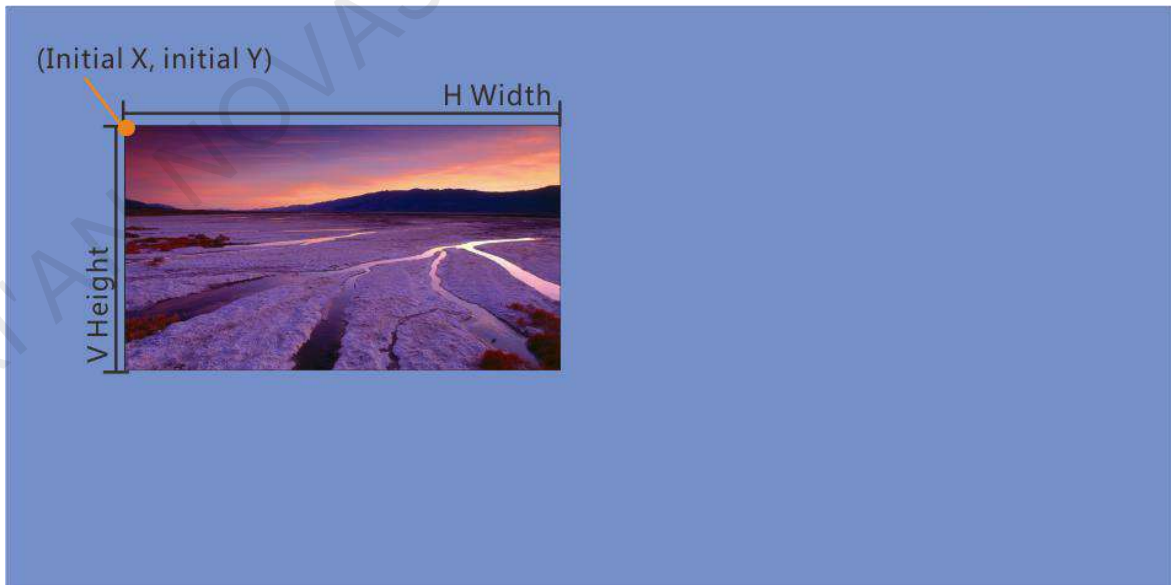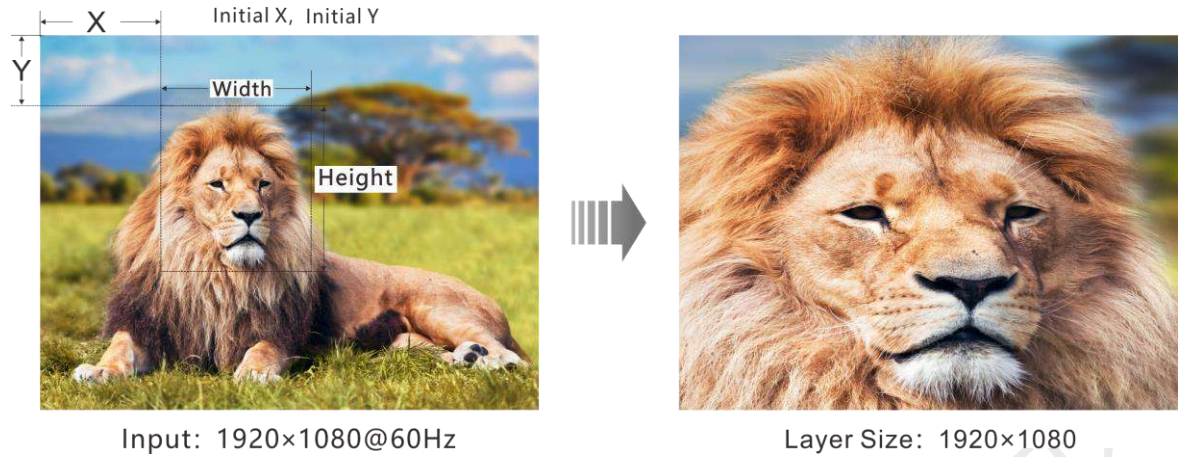| Menu	Description
	The options include **1:1**, **5:4**, **4:3**, **3:2**, **16:9**, **16:10** and **Custom**.
	• Keep Ratio: Keep the aspect ratio.
	• H Width: The value ranges from 64 to 32768, and defaults to **800**.
	• V Height: The value ranges from 64 to 32768, and defaults to **600**.
	• Initial X: Set the horizontal initial coordinate of the layer.
	• Initial Y: Set the vertical initial coordinate of the layer.
	• Full Screen: Make the layer display in full screen.
	• Reset: Reset all the settings to defaults.
Priority	Set the layer display order. The value ranges from 1 to 6.
	• 1: The layer is at the bottom.
	• 6: The layer is on the top.
Input Crop	Crop the input source image and make the cropped part display in full screen.
	• Status: Turn on or turn off this function for the selected layer.
	• H Width: The horizontal width of the current input source. The value ranges from 64 to horizontal width of the input source.
	• V Height: The vertical height of the current input source. The value ranges from 64 to vertical height of the input source.
	• Initial X: The horizontal initial coordinate of the cropped part upon the current input source. The default value is **0**.
	• Initial Y: The vertical initial coordinate of the cropped part upon the current input source. The default value is **0**.
Advanced	Set the copying, flipping and other properties of the layer.
	For details, please see 5.4.1.2 Advanced.
Reset	Reset all the layer settings to defaults.

Figure 5-8 Layer parameter descriptions

Figure 5-9 Input crop

Input: 1920×1080@60Hz   Layer Size: 1920×1080

5.4.1.2 Advanced

Copy

Add a new layer displaying the cloned or mirrored image.

Menu	Description
Status	Turn on or turn off the layer copying function. The options are **None**, **Clone**, **Left Mirror** and **Right Mirror**. **None** indicates turning off the function.
Initial X	Set the horizontal initial coordinate of the new layer. The vertical initial coordinate of the new layer keeps the same with that of the old one.
Reset	Reset all the settings to defaults.

Figure 5-10   Clone

Figure 5-11 Right mirror

Figure 5-12 Left mirror

Mask

Mask a certain part of the layer. The area that has been masked is transparent and the layer size remains the same. The adjustment unit is pixel.

Menu	Description
Status	Turn on or turn off the layer mask function.
Mode	The options are **Mask Top**, **Mask Bottom**, **Mask Left** and **Mask Right**. The value ranges from 0 to the vertical height/horizontal width of the layer, and defaults to **0**.
Reset	Reset all the settings to defaults.

Figure 5-13   Mask (mask top, bottom, left and right)
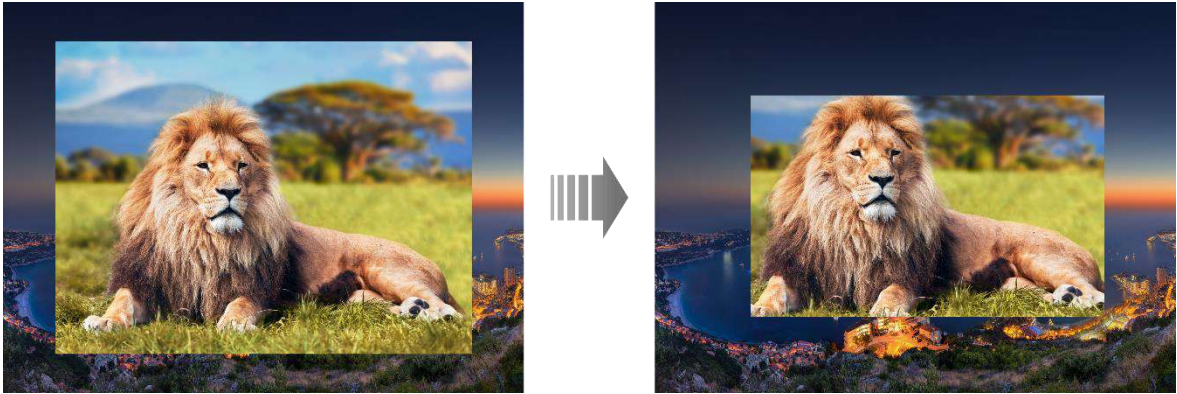
Opacity

Set the opacity of the layer. The value ranges from 0% (transparent) to 100% (nontransparent). The default value is **100%** and the adjustment stepping is 1%.

Figure 5-14   50% opacity

Flip

Flip the layer image. The options are **None**, **H**, **V** and **H/V**. **None** indicates not flipping.

Figure 5-15   Layer flipping
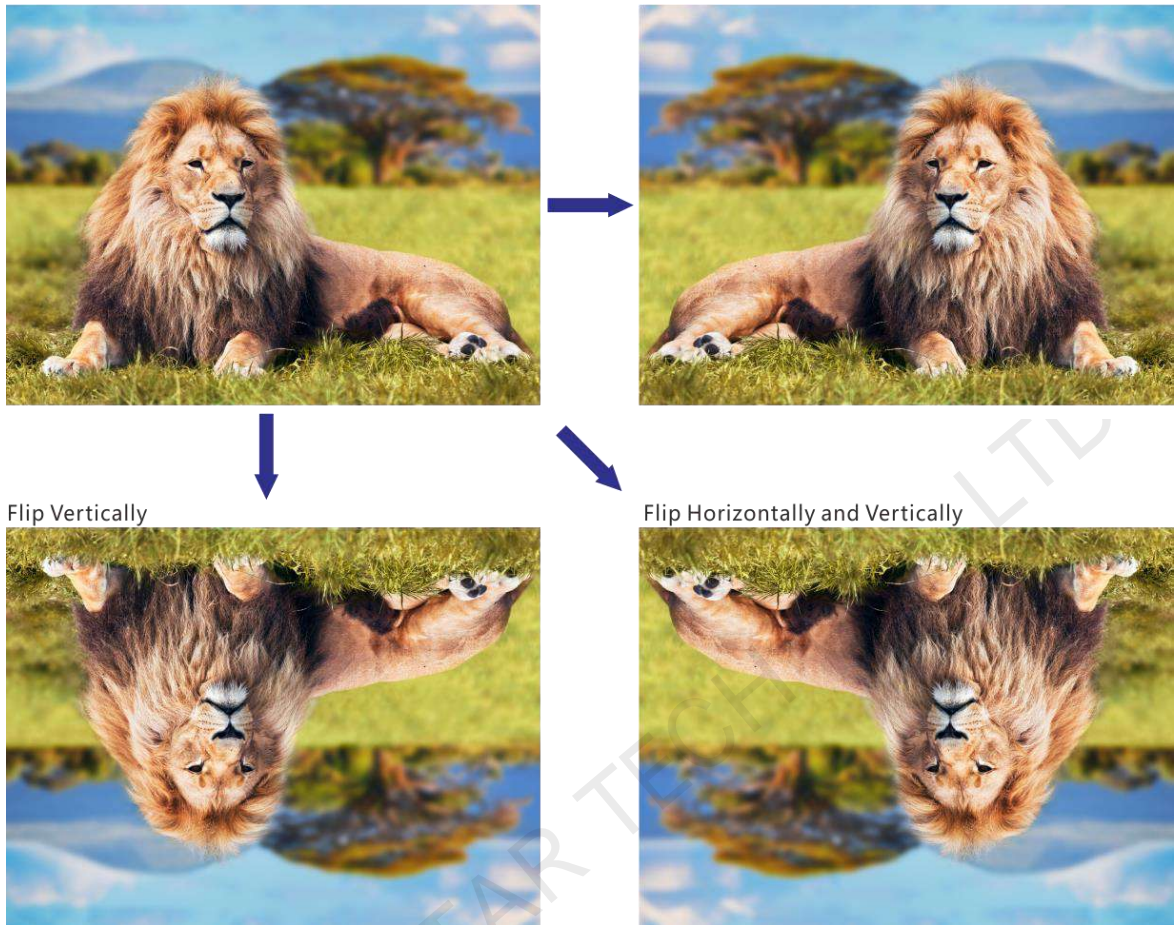
Color

Adjust the layer color parameters, including brightness, contrast, saturation, hue, monochrome and inverting colors.

Menu	Description
Brightness	Adjust the brightness of the layer image. The value ranges from 0 to 100, and defaults to **50**.
Contrast	Adjust the contrast of the layer image. The value ranges from 0 to 100, and defaults to **50**.
Saturation	Adjust the saturation of the layer image. The value ranges from 0 to 100, and defaults to **50**.
Hue	Adjust the hue of the layer image. The value ranges from –180 to +180, and defaults to **0**.
Monochrome	Select whether to set the layer image to gray scale image. The default option is **Off**.
Invert Colors	Invert the color to its complementary color that combined with the original color makes white (RGB: 255,255,255). For example, if the original color is red (RGB: 255,0,0), the inverted color is cyan (RGB: 0, 255, 255).

Figure 5-16   Monochrome

Figure 5-17   Invert colors

Shape

Set the layer shape. The options are **Normal**, **Heart**, **Star**, **Circle**, **Crescent**, **Oval**, and **Diamond**.

Figure 5-18   Oval layer

5.4.2 LOGO

Display the company Logo.

Menu	Description
Status	Turn on or turn off the LOGO function. The default option is **Off**. Note: If no LOGO images are added or imported, the LOGO function cannot be turned on.

Menu	Description
Select LOGO	Select a desired LOGO file. The LOGO file is sent by the built-in platform Master VI.
Initial X	Set the horizontal initial coordinate of the LOGO file upon the screen. The value ranges from –8192 to +8192, and defaults to **0**.
Initial Y	Set the vertical initial coordinate of the LOGO file upon the screen. The value ranges from –8192 to +8192, and defaults to **0**.
Opacity	Set the opacity of the added LOGO file. The value ranges from 0% (transparent) to 100% (nontransparent), and defaults to **100%.**
Crop	• Status: Turn on or turn off the LOGO cropping function. The default option is **Off**. • H Width: Set the horizontal width of the LOGO file after cropping. • V Height: Set the vertical height of the LOGO file after cropping. • Initial X: Set the horizontal initial coordinate of the cropped part upon the LOGO file. • Initial Y: Set the vertical initial coordinate of the cropped part upon the LOGO file. • Reset: Reset all the settings to defaults.

Note:

• LOGO has the highest priority and is placed on the top of OSD and BKG.

• Press the **LOGO** button in the **FUNCTION** area on the device front panel to turn on the LOGO function and enter the LOGO settings screen.

Figure 5-19   LOGO cropping

5.4.3 OSD

Set the text and picture overlay display effect for the output image.

Menu	Description
Status	Turn on or turn off the OSD function. The default option is **Off**.
Select OSD	Select a desired OSD text or image.
Initial X	Set the horizontal initial coordinate of the OSD file upon the screen. The value ranges from –8192 to +8192, and defaults to **0**.
Initial Y	Set the vertical initial coordinate of the OSD file upon the screen. The value ranges from –8192 to +8192, and defaults to **0**.
Speed	Set the OSD scrolling speed. The value ranges from 1 to 3, and defautls to **1**. This function is available when OSD is text.
Direction	Set the OSD scrolling direction. The options are **From Right to Left** (default) and **From Left to Right**. This function is available when OSD is text.
Opacity	Set the OSD opacity. The valur ranges from 0% (transparent) to 100% (Nontransparent), and defaults to **100%**.
Crop	• Status: Turn on or turn off the OSD cropping function. The default option is **Off**. • H Width: Set the horizontal width of the OSD file after cropping.

Menu	Description
	• V Height: Set the vertical height of the OSD file after cropping.
	• Initial X: Set the horizontal initial coordinate of the cropped part upon the OSD file.
	• Initial Y: Set the vertical initial coordinate of the cropped part upon the OSD file.
	• Reset: Reset all the settings to defaults.

Note:

• OSD has the second highest priority, and is placed on the top of other layers.

• Press the **OSD** button in the **FUNCTION** area on the device front panel to enter the OSD settings screen.

5.4.4 BKG

Set the background image that has the lowest priority.

Menu	Description
Status	Turn on or turn off the BKG function. The default option is **Off**.
Type	Select the desired BKG file. The options are **Pure Color** and **Image**.
BKG Image/ Pure Color BKG	• BKG Image: Capture the input source as a BKG image or import a BKG image from Master VI. • Pure Color BKG: Set the individual R, G and B values to set a pure color as the BKG.
Capture	• Source: Select an input source to be captured. • Save To: Set the save location of the captured image. − If a BKG image already exists in the location, the original image will be overwritten by the new one. − The location name consists of two parts: BKG and a number. − At most 16 BKG images can be saved. • Capture: Save the captured input source image to the selected location. Note: If the AUX signal source is set to PGM or PVW and the source for capturing is PVW or PGM, the AUX display will flicker during BKG capturing.

Figure 5-20   Capturing

5.5 Input Settings

5.5.1 DVI Input Mode

This menu can be shown and set when the DVI input card is installed. If no DVI card is installed, this menu is hidden.

DVI input card supports **Single Link** and **Dual Link** modes.

● Single Link: 4x Single link DVI connectors, each with up to 1920×1080@60Hz input resolution

● Dual Link: 2x Dual-link DVI connector (2 & 4) , each with up to 3840×1080@60Hz input resolution

Figure 5-21   Single link mode
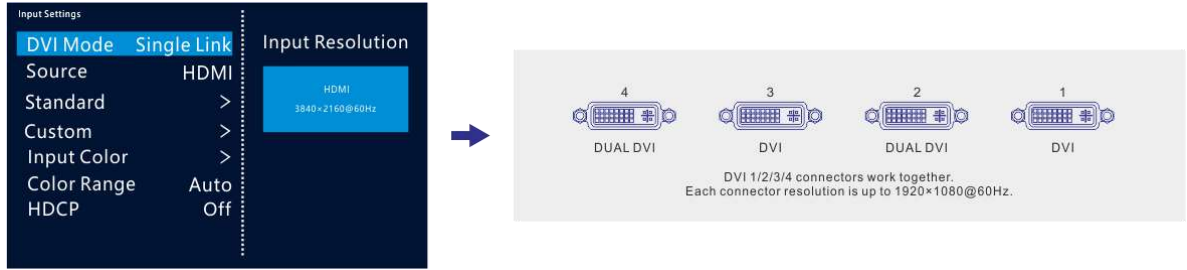
Figure 5-22   Dual link mode
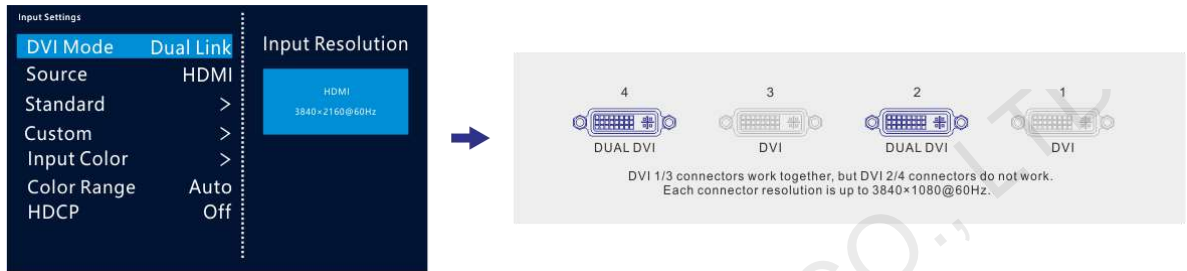
5.5.2 Input Source

The NovaPro UHD provides SDI-1, SDI-2, SDI-3, SDI-4, INPUT1, INPUT2, INPUT3, INPUT4, DP and HDMI input connectors. The input source is named after the input connector.

Rotate the knob to select a desired input source and press the knob to access the input source resolution menu.
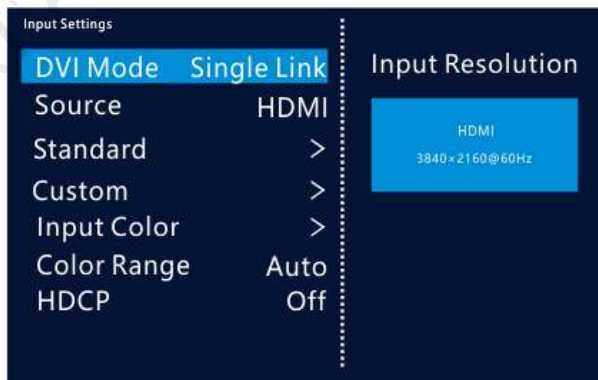
Note:

When DP is selected as the input source and the DP source is from the VIO 4K from ANALOG WAY, hold down the **ESC** button on the device front panel to enter the **Parameter Settings** screen and turn on **SWING Configuration**.

5.5.3 Input Source Resolution

Adjust the resolution and frame rate of the input source through either of the following ways.

- Standard resolution
- Custom resolution

Figure 5-23   Setting input source resolution

Note:

The SDI input source does not support the input resolution settings.

Standard Resolution

Select a standard resolution and frame rate. Rotate the knob to select **Apply** and press the knob to make the settings take effect. If you do not press the knob, the settings will not take effect.

Figure 5-24 Standard resolution
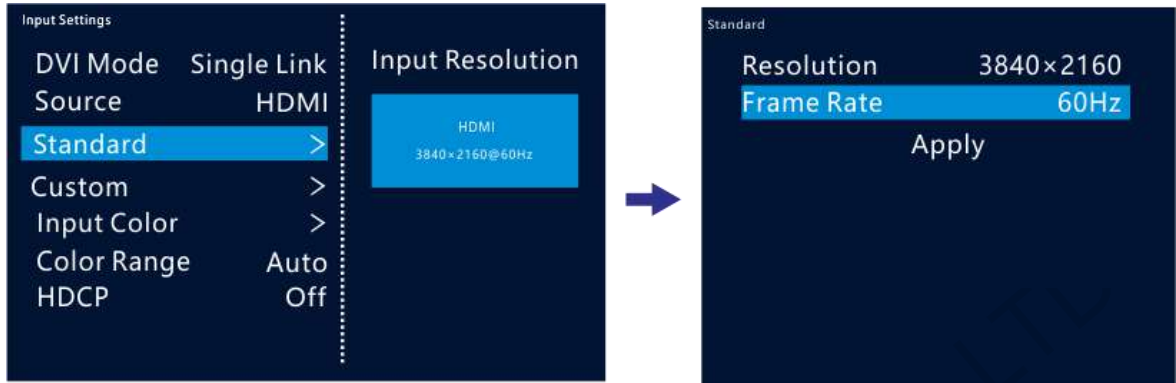
Input Resolution						
Standard Resolution	Standard Frame Rate (Hz)	SL-DVI	DL-DVI	HDMI 1.3	HDMI 2.0	DP 1.2
1024×768	48/50/59.94/60/75/85	√	√	√	√	√
1280×720	23.98/24/25/29.97/30/48/50/59.94/60	√	√	√	√	√
1280×1024	48/50/59.94/60/75/85	√	√	√	√	√
1366×768	50/59.94/60	√	√	√	×	×
1440×900	60/75/85	√	√	√	√	√
1600×1200	48/50/59.94/60	√	√	√	√	√
1680×1050	60	√	√	√	√	√
1920×1080	23.98/24/25/29.97/30/48/50/59.94/60	√	√	√	√	√
1920×1200	50/59.94/60	√	√	√	√	√
2048×1080	30/48/50/59.94/60	√	√	√	√	√
2048×1152	30	√	√	√	√	√
2048×1152	60	√	√	√	√	√
2560×1080	50/59.94/60	×	√	×	√	√
2560×1600	50/59.94/60	×	√	×	√	√
2560×1600	120	×	×	×	√	√
3840×1080	30/50/59.94/60	×	√	×	√	√
3840×1080	120	×	×	×	√	√
3840×2160	30	×	√	×	√	√
3840×2160	60	×	×	×	√	√

- √: The connector supports the resolution and frame rate.
- ×: The connector does not support the resolution and frame rate.

Custom Resolution

Set a custom width, height and frame rate. Then rotate the knob to select **Apply** and press the knob to make the settings take effect. If you do not press the knob, the settings will not take effect.

Figure 5-25   Custom resolution
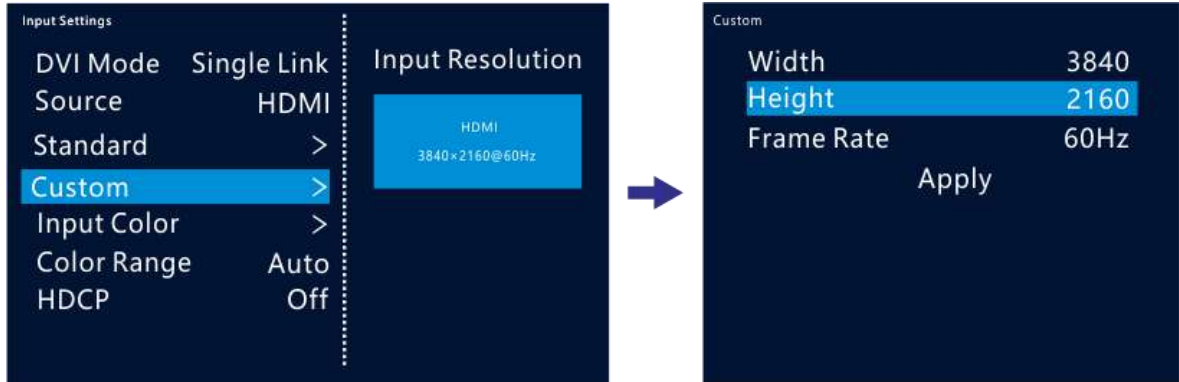
Connector	Custom Width Range	Custom Height Range	Custom Frame Rate	Default Width	Default Height	Default Frame Rate
• SL-DVI • HDMI 1.3	800~2048	600~2048	23.98 / 24 / 25 / 29.97 / 30 / 47.95 / 48 / 50 / 56 / 59.94 / 60 / 70 / 71.93 / 72 / 75 / 85 / 100 / 119.88 / 120	1920	1080	60Hz
DL-DVI	800~3840	600~3840		3840	1080	60Hz
• HDMI 2.0 • DP 1.2	800~3840	600~3840		3840	2160	60Hz

5.5.4 Input Color

Adjust the parameters of the input source image.

Menu	Description
Brightness	Adjust the brightness of the input source. The value ranges from 0 to 100, and defaults to **50**.
Contrast	Adjust the contrast of the input source. The value ranges from 0 to 100, and defaults to **50**.
Saturation	Adjust the saturation of the input source. The value ranges from 0 to 100, and defaults to **50**.
Hue	Adjust the hue of the input source. The value ranges from –180 to +180, and defaults to **0**.
Gamma	Adjust the Gamma value of the input source. The value ranges from 0.25 to 4.00, and defaults to **1.00**. The stepping is 0.01.
Reset	Reset all the settings to defaults.

5.5.5 Color Range

This function can automatically convert the limited RGB color range to full RGB range for the input source, so the device can process the source precisely.

- Off: Turn off the function.

- On: Turn on the function. It is recommended you turn on the function when the input source has a limited RGB color range.

5.5.6 HDCP

When the HDMI or DVI input card is used, the HDCP function is supported.

- On: Turn on the HDCP function.

● Off: Turn off the HDCP function.

5.6 Preset Settings

The NovaPro UHD supports up to 16 presets. Users can save, load and clear the presets.

Step 1 Rotate the knob to select **Preset Settings** and press the knob to enter the submenu.

Step 2 Rotate the knob to select a desired preset and press the knob to pop up a dialog box. In the displayed box, four preset operations are provided: **Save**, **Load**, **Clear** or **Copy To**.

Figure 5-26   Preset operations
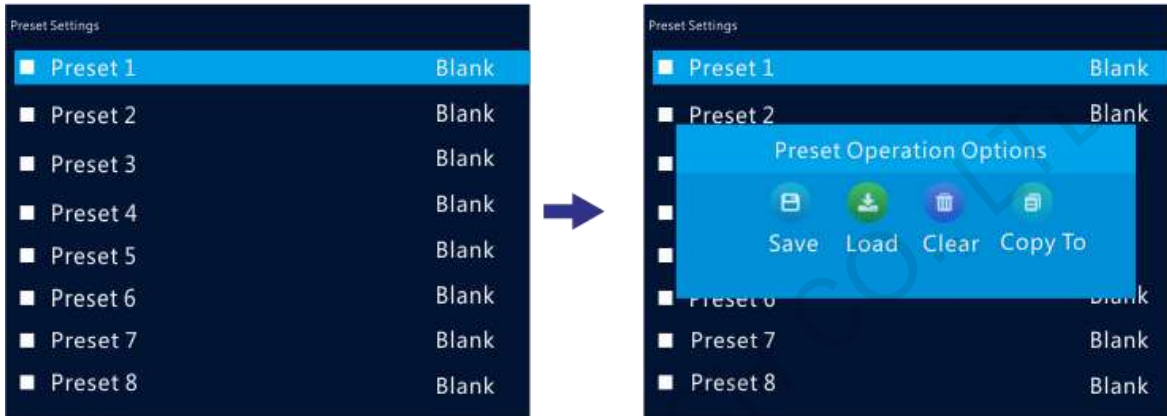
Menu	Description
Save	Save the current layer layout and settings to the target preset.
Load	Load the selected preset.
Clear	Clear all the contents in the selected preset.
Copy To	Copy the current preset to a target preset.

Note:

If you did not set any layers, BKG, LOGO or OSD, you cannot save a preset.

5.7 Image Mosaic

When the pixel count of the LED screen is larger than the loading capacity of a single NovaPro UHD unit, the image mosaic function is required. At most 4 device units can be linked through the USB cables.

Select Image Mosaic on the main menu screen to enter the image mosaic menu screen.

Figure 5-27   Image mosaic
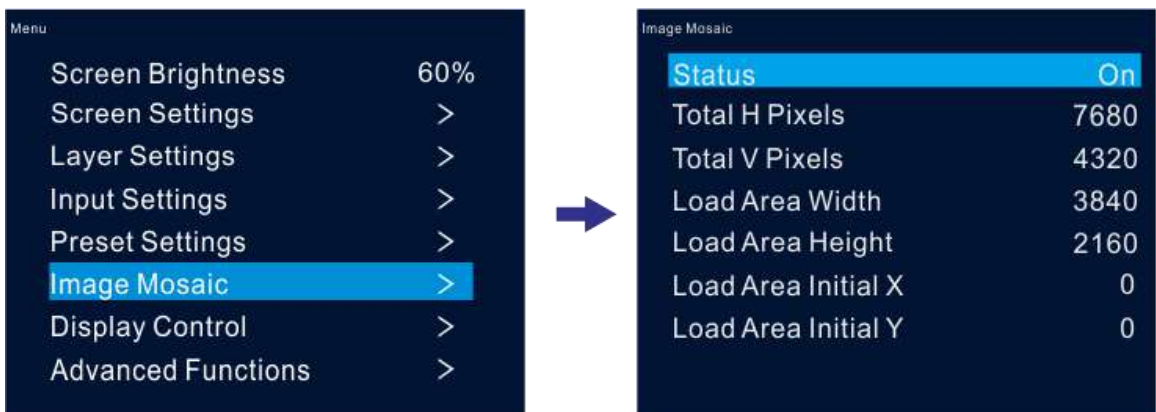
- Status: Turn on or turn off the function.
- Total H Pixels: The horizontal pixels of the LED screen
- Total V Pixels: The vertical pixels of the LED screen
- Load Area Width: The horizontal pixels of the area loaded by the current device
- Load Area Height: The vertical pixels of the area loaded by the current device
- Load Area Initial X: The distance between the left edge of the screen and the top left corner of the area loaded by the current device. The unit is pixel.
- Load Area Initial Y: The distance between the top edge of the screen and the top left corner of the area loaded by the current device. The unit is pixel.

Example

If the pixel count of the LED screen is 7680×4320 which exceeds the loading capacity of a single NovaPro UHD unit, four NovaPro UHD units can be linked together for image mosaic. The connections are shown in the following figure.

Figure 5-28   Multiple device units linked together for image mosaic
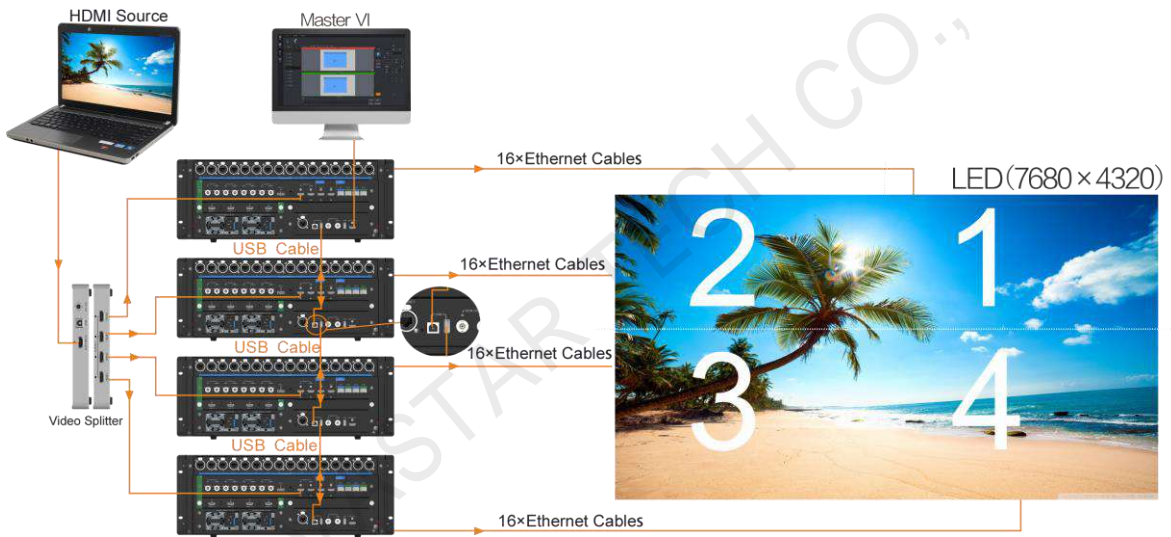
Table 5-1 Parameter settings

Device No.	1	2	3	4
Total H Pixels	7680			
Total V Pixels	4320			
Load Area Width	3840			
Load Area Height	2160			
Load Area Initial X	3840	0	0	3840
Load Area Initial Y	0	0	2160	2160

5.8 Display Control

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

Menu	Description
Normal	Display the current input source normally.
Freeze	Freeze the current frame of the output image.

Menu	Description
Black Out	Make the screen go black.
Test Pattern	Test the display effect and working status of the LED screen. Test patterns include **Pure Color**, **Gradient**, **Grid** and so on.
Output Color	Adjust the output image quality and the LED screen will display the effect in real-time. • Brightness: The value ranges from 0 to 100, and defaults to **50**. The stepping is 1. • Contrast: The value ranges from 0 to 100, and defaults to **50**. The stepping is 1. • Saturation: The value ranges from 0 to 100, and defaults to **50**. The stepping is 1. • Gamma: The value ranges from 0.25 to 4.00, and defaults to **1.00**. The stepping is 0.01. • Reset: Reset all the settings to defaults.
PVW to PGM	Set the display relationship between PVW and PGM. The options are **COPY** (default) and **SWAP**. • COPY: Send the PVW to PGM. • SWAP: Swap the display on PVW and PGM.
Transition Effect	Set the PGM transition effect. Up to 16 transition effects are supported. The default option is **Fade**.
Effect Duration	Set the duration of the transition effect. The value ranges from 0.5s to 2s, and defaults to **0.5s**.

5.9 Advanced Functions

Advanced functions include HDR, low latency, OPT mode and AUX.

5.9.1 HDR

HDR is an acronym for High-Dynamic Range. HDR function can greatly enhance the display image quality, allowing for a more clear and vivid image when the device is used together with A8s/A10s Plus receiving cards.

Figure 5-29   System architecture

Figure 5-30   HDR effect

Step 2   Go to **Advanced Functions** > **HDR** > **Status** to turn on the HDR function.

Step 3   Rotate the knob to adjust the value of each parameter to improve the image quality.

Menu	Description
Peak Screen Brightness	Adjust the screen brightness under normal operation. The value ranges from 100 to 10000, and defaults to **1000**.
Ambient Brightness	Display the ambient brightness. The value ranges from 0 to 200, and defaults to **30**.
Low Grayscale Mode	Adjust the grayscale value of the image displayed on the LED screen. The value ranges from 0 to 50, and defaults to **15**.

Step 4   (Optional) Select **Reset** to reset all the parameters to defaults.

Note:

Currently only HDR10 input source is supported.

When the HDR function is enabled, you must use the receiving cards that support HDR function. For the related receiving card information, you can obtain from our technical support staff or official website www.novastar.tech.

5.9.2   Low Latency

Low latency reduces the input source signal latency from input to output of the NovaPro UHD. This function can reduce the latency from the input source to receiving card to 1 frame when the device works with NovaStar A5 or later receiving cards.

Note:

Before you use the low latancy function, make sure you have turned on the synchronization function and the data runs verically on the LED screen.

5.9.3   OPT Mode

The NovaPro UHD supports two OPT modes: **Hot Backup** (default) and **Copy**.

Menu	Description
Hot Backup	OPT ports 3 and 4 back up the data on OPT ports 1 and 2.
Copy	OPT ports 3 and 4 copy the data on OPT ports 1 and 2.

Hot Backup

Step 1   Perform the hardware connections for hot backup mode.

Figure 5-31   Connections for hot backup mode
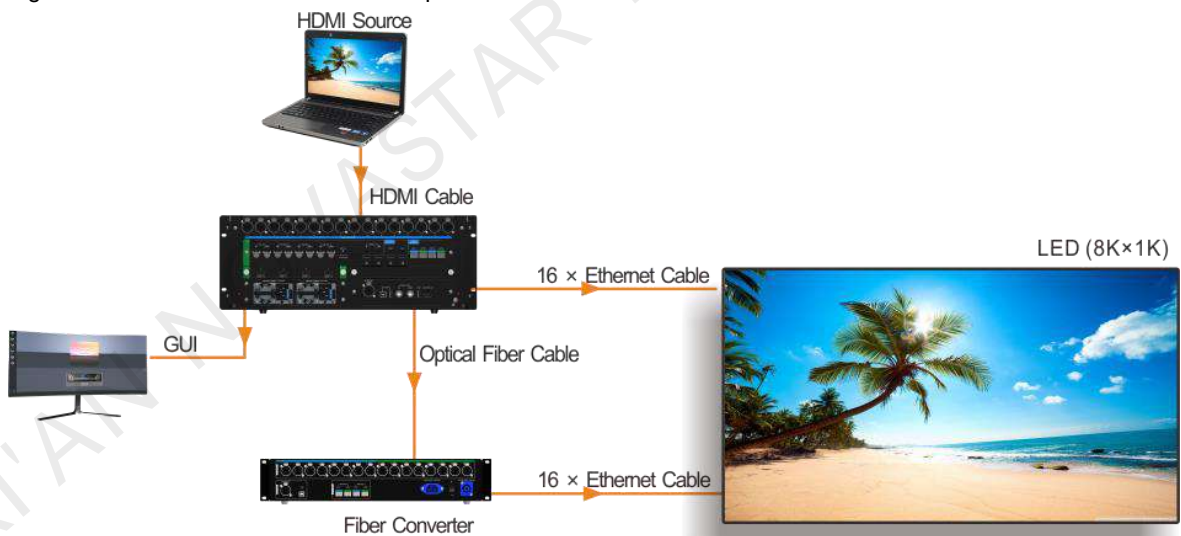
Note:

If the Ethernet cable of the NovaPro UHD or fiber converter fails, the LED screen can still work normally.

Step 2   Go to **Advanced Functions** > **OPT Mode** > **Hot Backup** to set the OPT mode to hot backup mode.

Copy

Step 1   Perform the hardware connections for copy mode.

Figure 5-32   Connections for copy mode
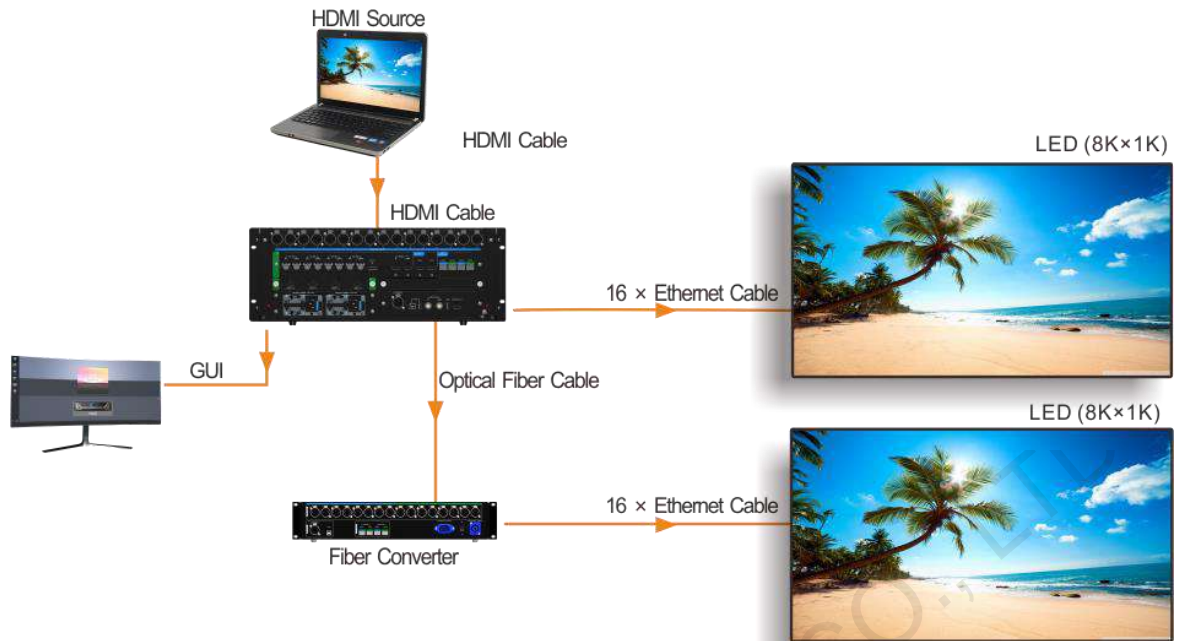
Step 2   Go to **Advanced Functions** > **OPT Mode** > **Copy** to set the OPT mode as copy mode.

5.9.4   AUX

This function is used for auxiliary output of input sources, PVW or PGM. You can output the signal source to the connected display device without any processing.

Menu	Description
Status	Turn on or turn off the AUX function. The default option is **Off**.
Select AUX	Select a desired AUX signal source. The options are all input sources, PVW and PGM.
AUX Scaling	Set the AUX display mode. • Full Screen: Display the image in full screen. • Proportional: Scale the image proportionally and then display it on the screen.
Follow Preset	Set whether the AUX follow the preset during switching. • On: If there is AUX data in the preset, the AUX input source will be switched during preset switching. • Off: The AUX input source will not be switched during preset switching.

Note:

Capturing PVW or PGM will cause transient abnormal display of AUX output image. After the capturing is completed, AUX displays normally.

5.10 General Settings

Figure 5-33   General settings
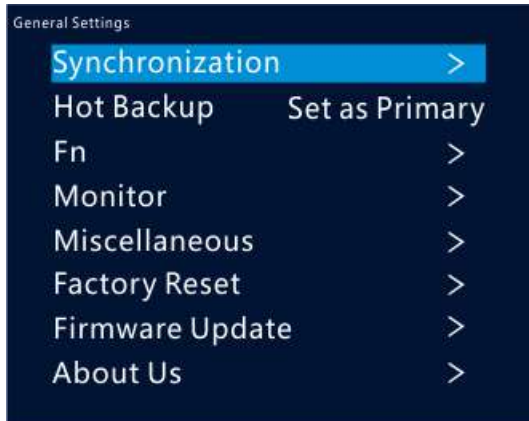
5.10.1 Synchronization

Select a synchronization signal to synchronize all the linked device units.

Step 1   Rotate the knob to select **Synchronization** and press the knob to enter the submenu.

Step 2   Rotate the knob to set the synchronization status and source respectively.

Menu	Description
Status	Turn on or turn off the synchronization function. The default option is **Off**.
Source	Select **Genlock** or other input sources as the sync source.

5.10.2 Hot Backup

The NovaPro UHD supports two hot backup modes: **Set as Primary** and **Set as Backup**.

Menu	Description
Set as Primary	In device backup applications, when the device is set as the primary device, it cannot be used for Ethernet port backup.
Set as Backup	In device backup applications, when the device is set as the backup device, it cannot be used for Ethernet port backup.
Set as Normal	The device is not used for any backup.

Figure 5-34   Data flow for Primary and Backup modes
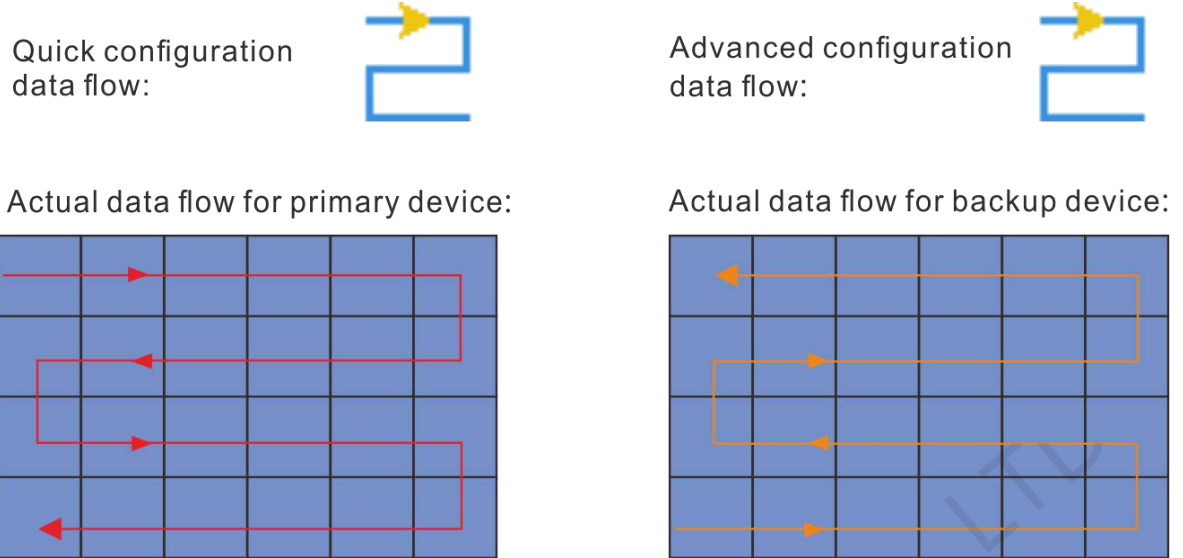
5.10.3 FN Button

The **FN** button on the device front panel can be customized to a shortcut button for the functions including **Synchronization**, **Capture**, **Quick Configuration** and **Output Color**.

- Press the button to enter the function menu screen.
- Hold down the button to customize the function for the button.

5.10.4 Monitor

Set to monitor all input sources, PVW and PGM, or one of them.

Menu	Description
All	Set to monitor all input sources, PVW and PGM.
Single	Set to monitor the selected input source, PVW or PGM.

5.10.5 Miscellaneous

Output Frame Rate

Set the output frame rate of the image output by Ethernet port. The default setting is **60 Hz**.

The supports frame rates are 23.98 Hz, 24 Hz, 25 Hz, 29.97 Hz, 30 Hz, 47.95 Hz, 48 Hz, 50 Hz, 59.94 Hz, 60 Hz, 71.93 Hz, 72 Hz, 75 Hz, 85 Hz, 100 Hz, 119.88 Hz and 120 Hz.

AUX Frame Rate

Set the output frame rate for the AUX connector to fit for the connected auxiliary display device. The default setting is **60 Hz**.

MVR Frame Rate

Set the output frame rate for the MVR connector to fit for the connected display device for monitoring. The default setting is **60 Hz**.

Return to Home

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. The default setting is **60s** and the maximum value is 3600s.

USB Backup/Restore

Back up the data to a USB drive or restore the data from the USB drive.

Menu	Description
USB Backup	Back up the following information to a USB drive, including the configured presets, PVW and PGM data, LOGO, OSD, BKG, screen configuration, screen brightness, input source color, color range information, AUX data, synchronization settings, hot backup settings, output frame rate, HDR data, low latency settings, OPT mode, display control information and communication settings.
USB Restore	Restore the backup files from the USB drive.

Figure 5-35   USB backup/restore

Date and Time

Set the device date and time.

Menu	Description
Date	Display the device date.
Time	Display the device time.
Change Date and Time	Adjust the **Year**, **Month**, **Day**, **Hour**, **Minute** and **Second** values to change the device date and time.

Self-Test

- **Device Parameter Self-Test**: When problems occur on the device, you can use this function to automatically diagnose the device and send the test result to device maintenance personnel to locate the problems or check the device.

- **Export Logs**: Export the device operation logs.

5.10.6 Factory Reset

Reset all the device settings to defaults.

Menu	Description
Reset (Save IP)	Reset all the settings to defaults, but save the IP address.
Reset (All)	Reset all the settings to defaults.

5.10.7 Firmware Update

Update the device firmware by using a USB drive.

Precondition: The update program must be stored in the root directory of the USB drive.

- The system can automatically detect the update program in the USB drive and ask you whether to update the firmware.

- You can also go to **Firmware Update** > **USB** to update the firmware anytime you want.

A

5.10.8 About Us

View the device hardware version, company website (www.novastar.tech) and email address (support@novastar.tech).

5.11 Communication Settings

5.11.1 Communication Mode

Figure 5-36   Communication mode
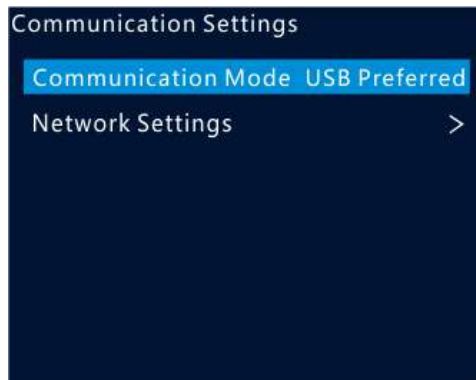
The device is connected to the PC through USB port and Ethernet port. The options are **USB Preferred** and **LAN Preferred**.

● When **USB Preferred** is selected, the device prefers the communication through USB port.

● When **LAN Preferred** is selected, the device prefers the communication through Ethernet port.

5.11.2 Network Settings

The options are **Manual** and **Auto**.

● Manual: Set the device IP address, subnet mask and gateway manually.

● Auto: The device reads the network parameters automatically.

● Reset: Reset all the settings to defaults.

Figure 5-37   Network settin\gs
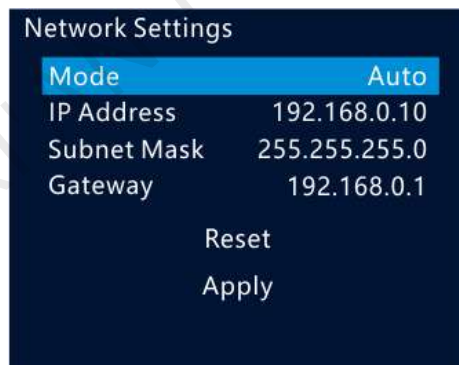
Note:

1. When communicating with the control PC, the device and control PC must be on the same LAN.
2. The IP address of current device cannot conflict with IP addresses of other devices.

5.12 Langugage

The NovaPro UHD supports **English** and **Chinese**. You can freely switch to either language.

6   **Built-in Platform Master VI**

The NovaPro UHD has built in a smart control platform Master VI. The platform consists of four modules, including **Home**, **Screen**, **Layer** and **Settings**, which can help you easily perform screen and layer related configurations.

Figure 6-1 Hardware connection
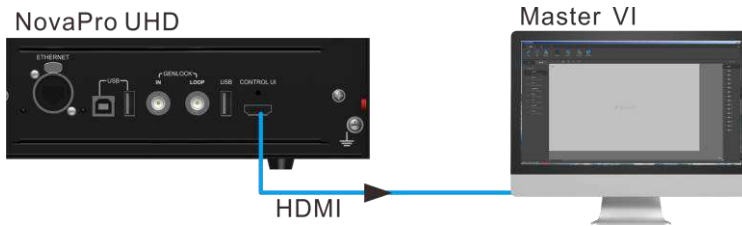
6.1 Home Page

Figure 6-2 Master VI home page
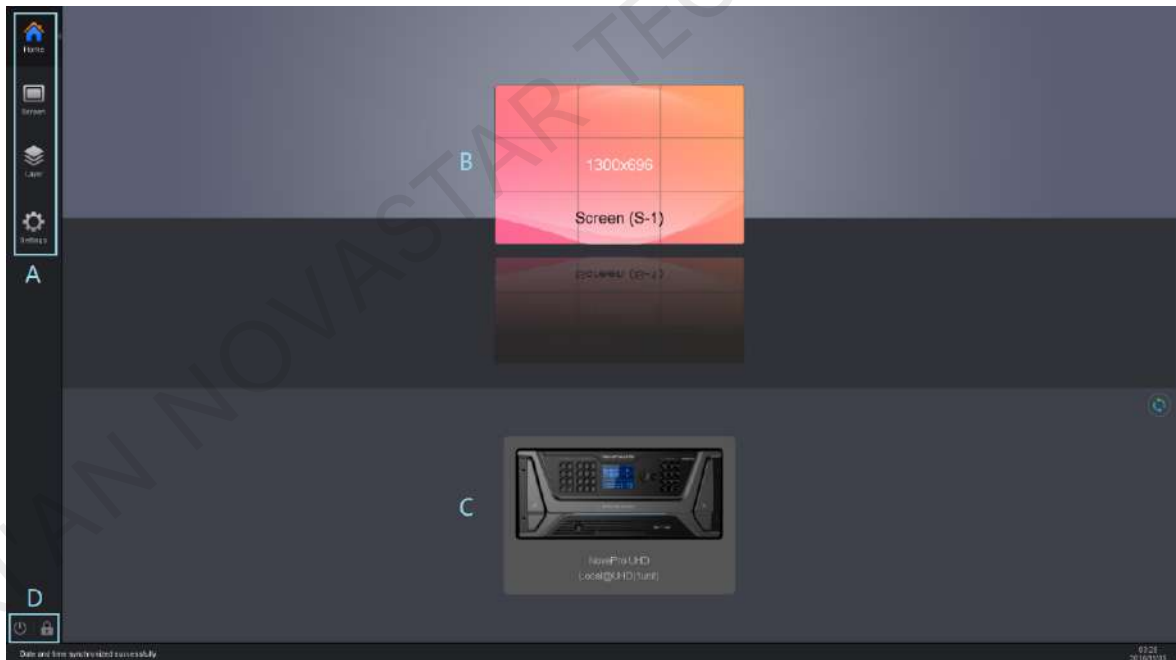
Area	Function	Description
A	Home	Display all the connected devices and configured screens.
	Screen	Configure the screens smartly, including adding cabinets and setting cabinet data flow.
	Layer	Configure the layers of different input sources.
	Settings	Provide the system related settings.
B	Screen	Display the sizes and names of the configured screens. Click a screen to enter the **Screen** page.
C	Device	Display the names and serial port numbers of the connected devices. Click a

Area	Function	Description
D		device to enter the **Layer** page. Click ⟳ at the top right corner of the device area to synchronize the device data.
	⏻	Shut down the connected devices.
	🔒	Set the user permissions. Password is required for login. The default password is null.

6.2 Screen Configuration

Figure 6-3 Adding cabinets and setting cabinet connection type
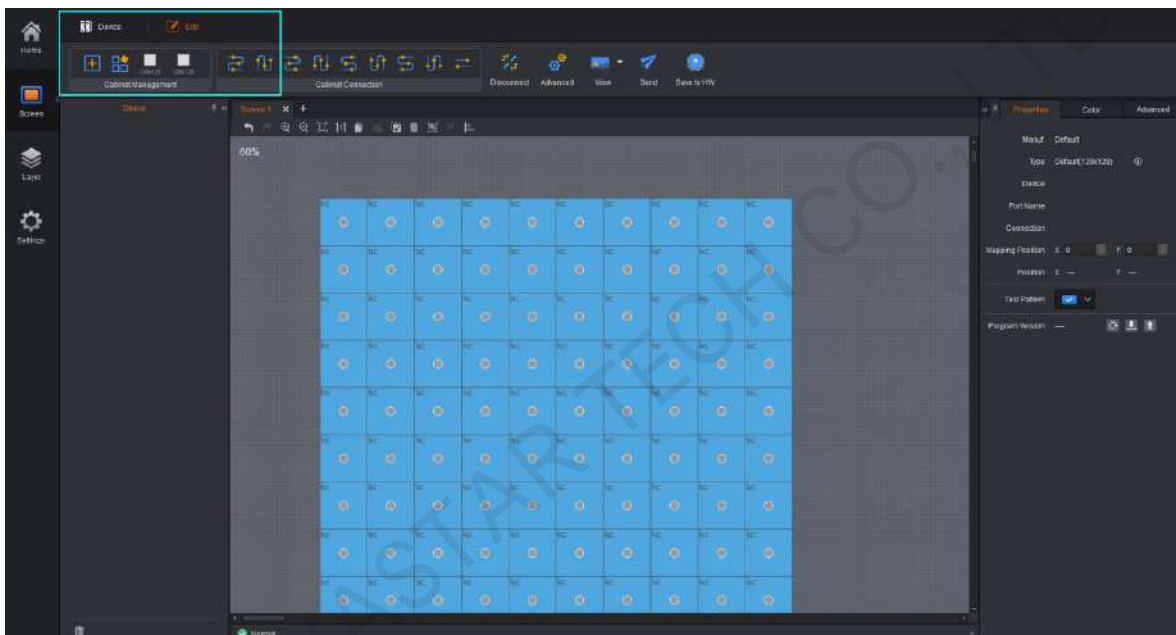
Area	Function	Description
Device	Refresh	Refresh and read the hardware information again.
	Hot Backup	Backup between the devices or backup between the Ethernet ports
	Mapping	Display the receiving card numbers and Ethernet port information on the cabinets.
	Brightness	Adjust the brightness of the LED screen.
	Frame Rate	Set the output frame rate of the NovaPro UHD.
Edit	Cabinet Management	Add cabinets and set the cabinet sizes.
	Cabinet Connection	Select the cabinet connection type.
	Disconnect	Delete the lines between cabinets.
	Advanced	Set the cabinet display status in the editing area and the snapping mode.
	View	Front view and rear view of the cabinets
	Send	Send the display configuration file to the hardware devices.
	Save to HW	Send and save the screen configuration files to the hardware devices.

6.2.1 Adding Cabinets

Step 1   Select the device type and Ethernet port type.

Step 2   Go to **Edit** > **Cabinet Management**. Click the following icons to select the cabinet types.

- : Add the cabinets in batches.

- : Add a single cabinet.

Step 3   Select the cabinet and set the cabinet size.

Step 4   Move the mouse to the editing area and click to add cabinets.

6.2.2 Cabinet Connection

Step 1   Click to select the output Ethernet port on the left.

Step 2   Drag to select the cabinets loaded by the Ethernet port.

Step 3   Go to **Edit** > **Cabinet Connection** to select a connection type. 8 connection types are supported.

Step 4   Click **Send** in the toolbar to send the screen configuration to the receiving card.

Note:

After the Ethernet port is selected, you can click the cabinets in turn according to the cabinet connection of LED screen to complete the whole connections.

Canvas Settings

Click the blank area on the canvas and select the **Canvas** tab to set the canvas-related properties.

Item	Description
Grid Color	Set the color of the canvas grid.
Grid Width	Set width of the canvas grid (unit: pixel).
Grid Height	Set the height of the canvas grid (unit: pixel).
Screen Name	Name the screen currently configured.
Disable Edit	When selected, any operations to the canvas are prohibited.

Figure 6-4 Canvas settings
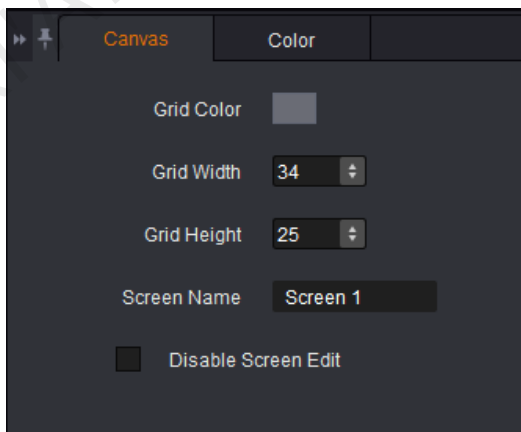
Screen Color Settings

Set the screen color related parameters. Click the **Color** tab to set the screen color.

- Customize the brightness, Gamma and color temperature.
- Enable 18-bit mode.
- Enable ClearView.
- Select the calibration type.
- Customize the color gamut.
- Enable PAL or NTSC.

Figure 6-5 Color properties
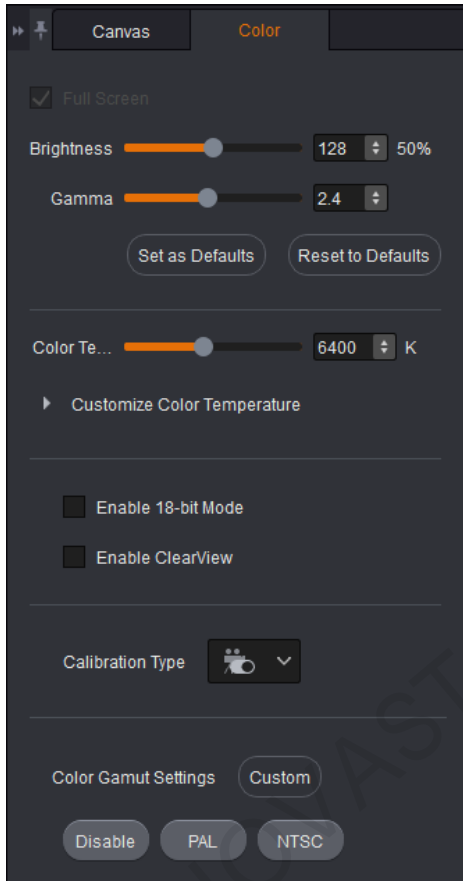
Figure 6-6 Color gamut
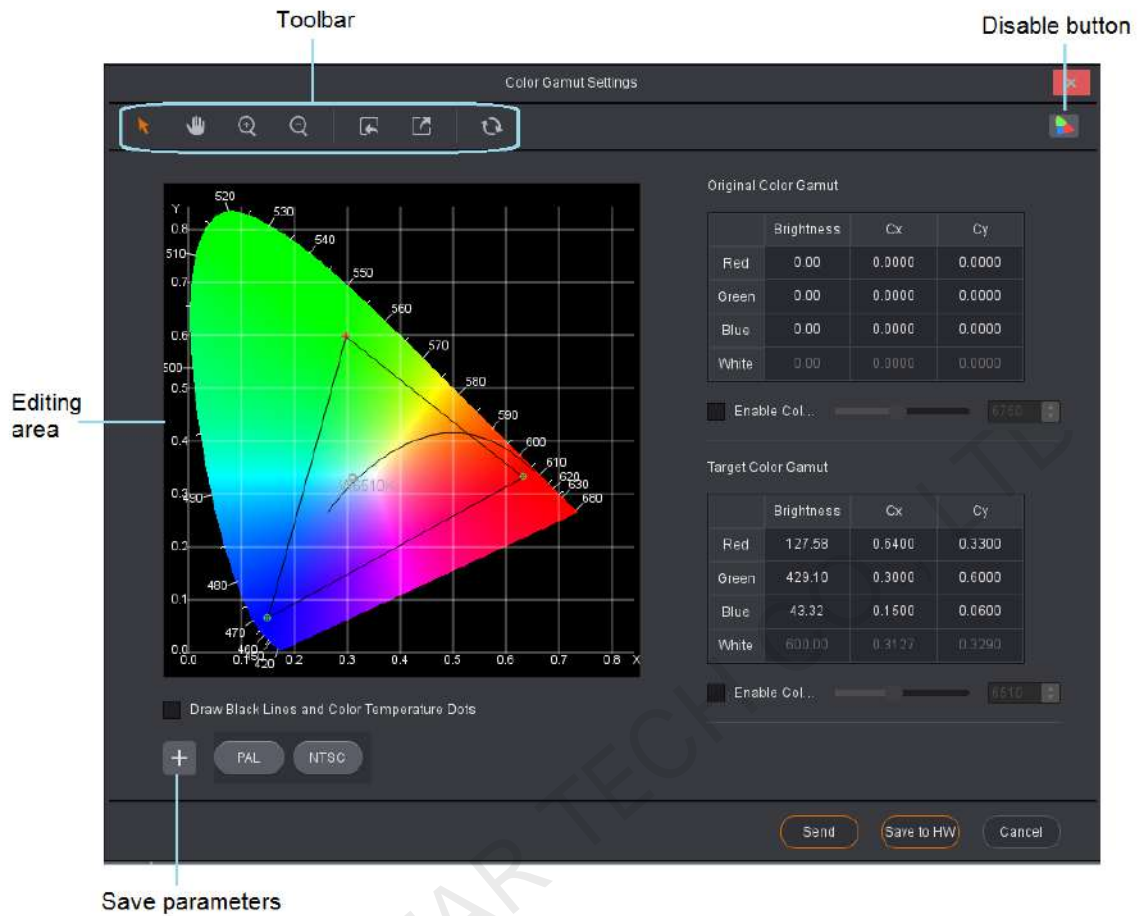
Table 6-1 Color gamut setting descriptions

Name		Description
Toolbar	![arrow]	Enable the editing function.
	![hand]	Disable the editing function.
	![zoom in]	Zoom in the editing area.
	![zoom out]	Zoom out the editing area.
	![import]	Import the configuration files.
	![export]	Export the current configuration as a configuration file.
	![reset]	Reset the color settings.
Editing area		Click and drag a point to set the target color gamut.
	![disable]	Disable the color gamut adjustment function.
	![plus]	Save the current color gamut parameters.
PAL/NTSC		Two standard broadcast formats

Name	Description
Send	Send the color gamut parameters to receiving card and these settings will be lost after power off.
Save	Send and save the color gamut parameters to receiving card and these settings will not be lost after power off.

Device Properties

Click the target cabinet and go to the **Properties** tab to view the device properties.

- Connection: 2-1-1 denotes that the sending card number is 2, Ethernet port number is 1, and the receiving card number is 1.

- Mapping Position: Horizontal and vertical coordinates of the top left corner of the selected cabinet on the screen

- Position: Horizontal and vertical coordinates of the top left corner of the selected cabinet on the canvas

- Test Pattern: Test the display effect.

- Program Version: Refresh, download or update the program version of the receiving card.

    - ⟳ : Read the firmware version of the receiving card, which is only applicable to single cabinet.

    - ⬇ : Download the firmware program of the receiving card, which is only applicable to single cabinet.

    - ⬆ : Update the firmware program of the receiving card, which is applicable to both single cabinet and multiple cabinets.

Figure 6-7 Device properties
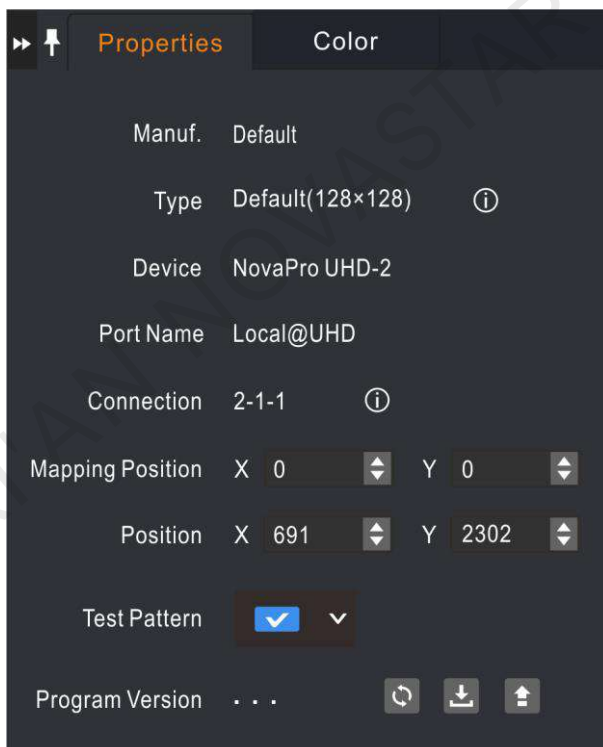
6.3 Layer Configuration

Add or delete the layers, OSD, LOGO and BKG, as well as set the layer properties and image quality.

Layer provides three function modules:

- System: Connect, refresh and test the device.

- Settings: Set the input or output resolution and image quality, transition effect and duration, AUX and HDR.
- OSD: Enable or disable OSD, LOGO and BKG.

Figure 6-8 Layer configuration
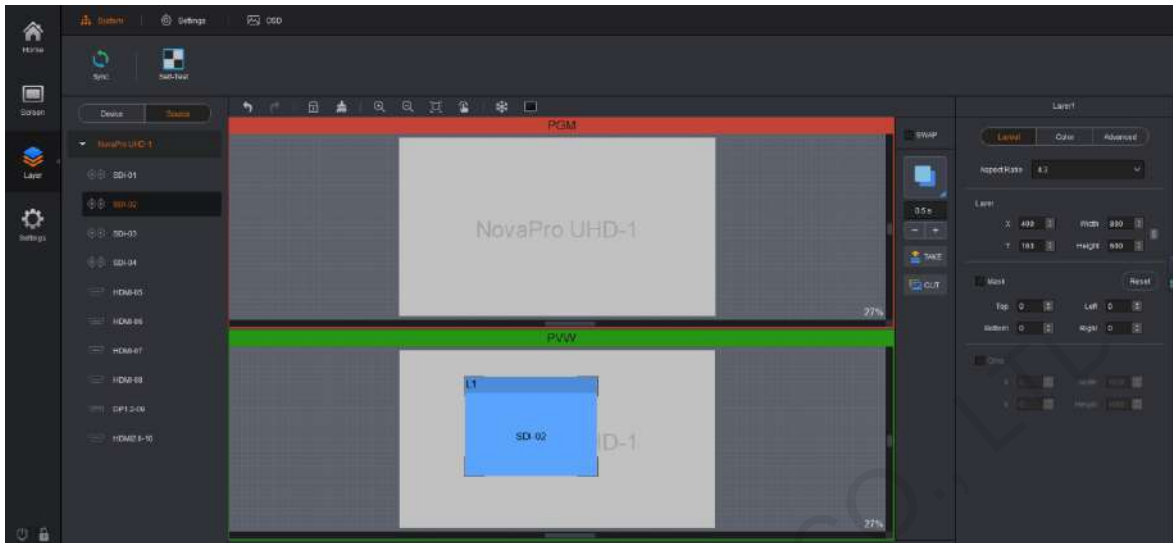
Area	Function	Description
System	Sync	Synchronize the configurations of the NovaPro UHD.
	Self-Test	Test the image display effect of the cabinet.
Settings	Input	Adjust the input resolution and input color.
	Output	Adjust the output color.
	System Mode	PGM Edit and Switcher modes are supported. • PGM Edit: Edit the layers in the PGM area. • Switcher: Edit the layers in the PVW area, and then click TAKE or CUT to send PVW to PGM.
	Sync Mode	Enable the sync mode and select the sync source.
	AUX	Turn on or turn off the AUX function, and set the AUX source, switching, display mode and output frame rate.
	HDR	Turn on or turn off the HDR function, and set the HDR related parameters.
	MVR	Set the output frame rate for the MVR connector.
	Preset	Perform the preset management, including adding, loading, clearing and copying.
OSD	OSD	Add an image or text on the LED screen.
	LOGO	Add an image on the LED screen as LOGO that has the highest priority.
	BKG	Add an image on the LED screen as BKG that has the lowest priority.
	Color BKG	Add a pure color on the LED screen as BKG that has the lowest priority.

Figure 6-9 Toolbar introduction

Icon	Description
↰	Cancel the previous action.

Icon	Description
↷	Restore the previous action.
🔒	Lock LOGO, OSD and layers.
🧹	Clear the editing area.
⊕	Zoom in the editing area.
⊖	Zoom out the editing area.
⌐⌐	Make the editing area auto fit the screen.
☝	Arrange all the layers, OSD and LOGO in PVW area by priorities. The 1st layer starts from the top left corner (starting point), and every subsequent layer gets a 50-pixel offset both horizontally and vertically from its previous layer. The layers sizes are 800×600 by default.
❄	Freeze the PGM and the Take function is disabled at this time.
■	Make the screen go black and the Take function can be enabled. When this function is disabled, the screen can display the images after Take button is clicked.

Figure 6-10　Transition settings

Area	Description
SWAP	• When **SWAP** is selected, if you click **TAKE** or **CUT**, the layers in PVW and PGM are interchanged. • When **SWAP** is not selected, if you click **TAKE** or **CUT**, the layers in PVW are copied to PGM.
▧	Set the transition effect when sending PVW to PGM.
0.5s −+	Set the transition effect duration by entering a value in the text box or clicking **+/-**. The value ranges from 0.5s to 2.0s, and defaults to **0.5s**.

Area	Description
Take	Send PVW to PGM with a transition effect.
Cut	Send PVW to PGM directly without a transition effect.

6.3.1 System

Sync

Click **Sync** to obtain all the device data, such as the layer data and preset data.

Self-Test

Test whether the currently-connected LED screen can display the images normally through the test pattern.
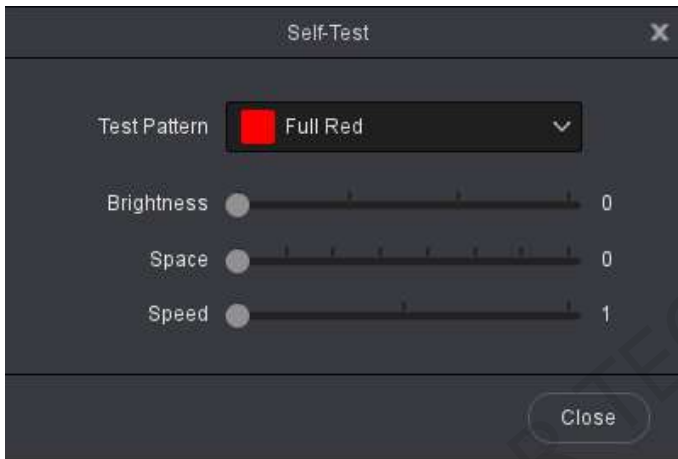
- Test Pattern: Select the image type to be displayed on the screen.

- Brightness: Set the brightness of the test pattern displayed on the LED screen.

- Space: Set the width of gradient color or the space between test lines. This parameter is configurable when the test pattern is not a pure color.

- Speed: Set the movement speed of the test lines. This parameter is configurable when the test pattern is lines.

Click **Close** to exit the self-test settings screen. When a test pattern is displayed on the LED screen, click **Self-Test** and select **Normal** on the self-test screen to close the test pattern.

6.3.2 Settings

Input

Set the input resolution and image quality of the input connector.

- Input

  Click **Input** to enter the input settings screen. The **Input** tab is selected by default.

Figure 6-11   Input
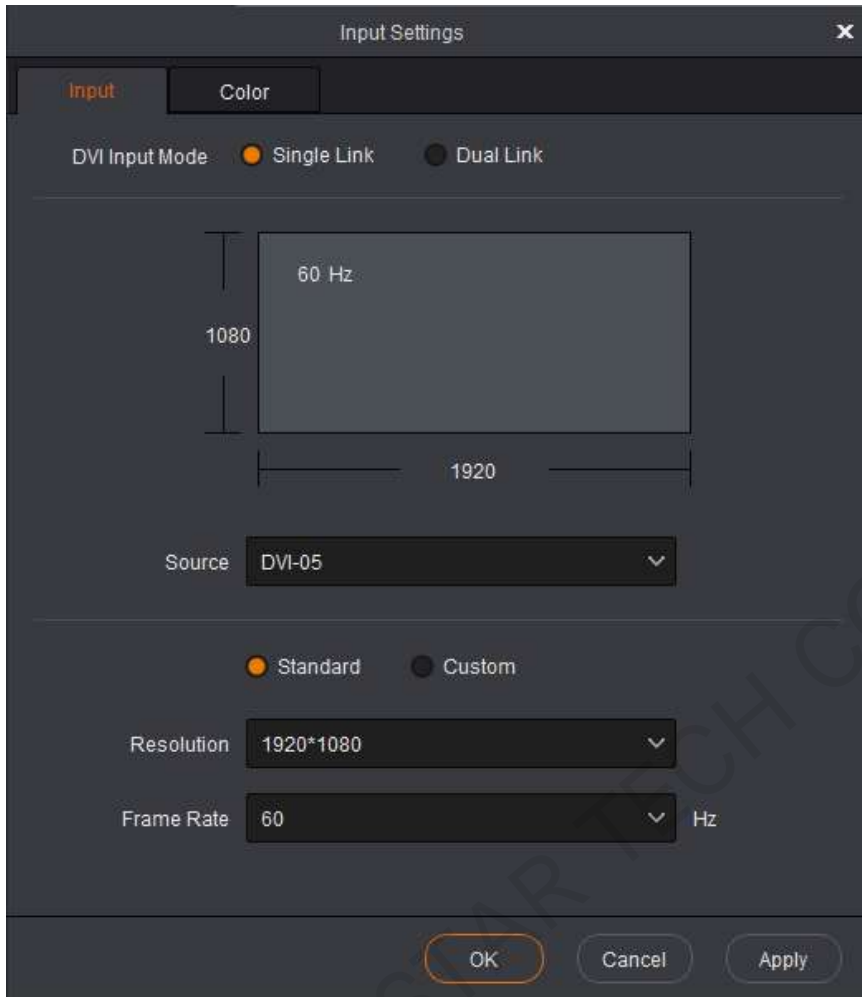
−   DVI Input Mode:

Single Link: 4 × Single link DVI connectors, each with up to 1920×1080@60Hz input resolution

Dual Link: 2 × Dual link DVI connectors (2 & 4), each with up to 3840×1080@60Hz input resolution

−   Select an input connector from the drop-down list of **Source**.

When **Standard** is selected, set the resolution and frame rate.

When **Custom** is selected, set the width, height and frame rate.

●   Color

Step 1   Click the **Color** tab to set the input image quality.

Figure 6-12   Input color
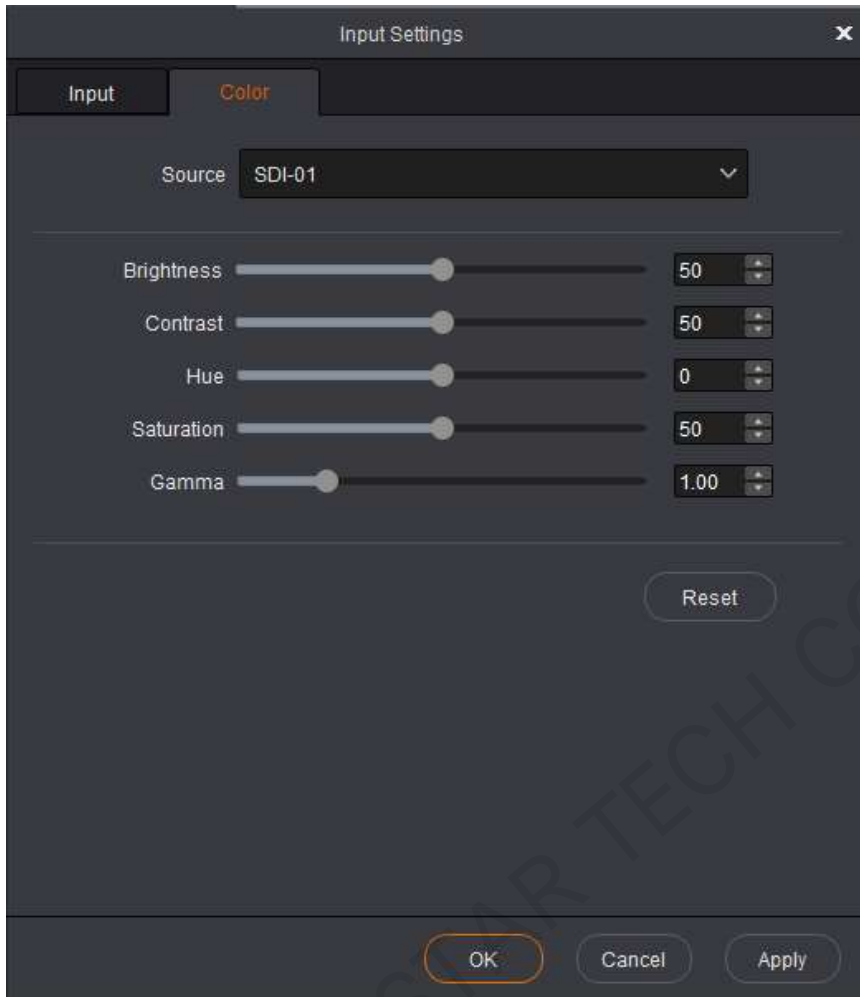
Select an input connector from the drop-down list of **Source**. Adjust the brightness, contrast, hue, saturation and Gamma.

Step 2   Click **Apply** to send the parameters to the devices.

Step 3   Click **OK** to complete the input settings.

Output

Set the output image quality.

Under the **Color** tab, you can adjust the brightness, contrast, hue, saturation and Gamma.

Figure 6-13   Output color
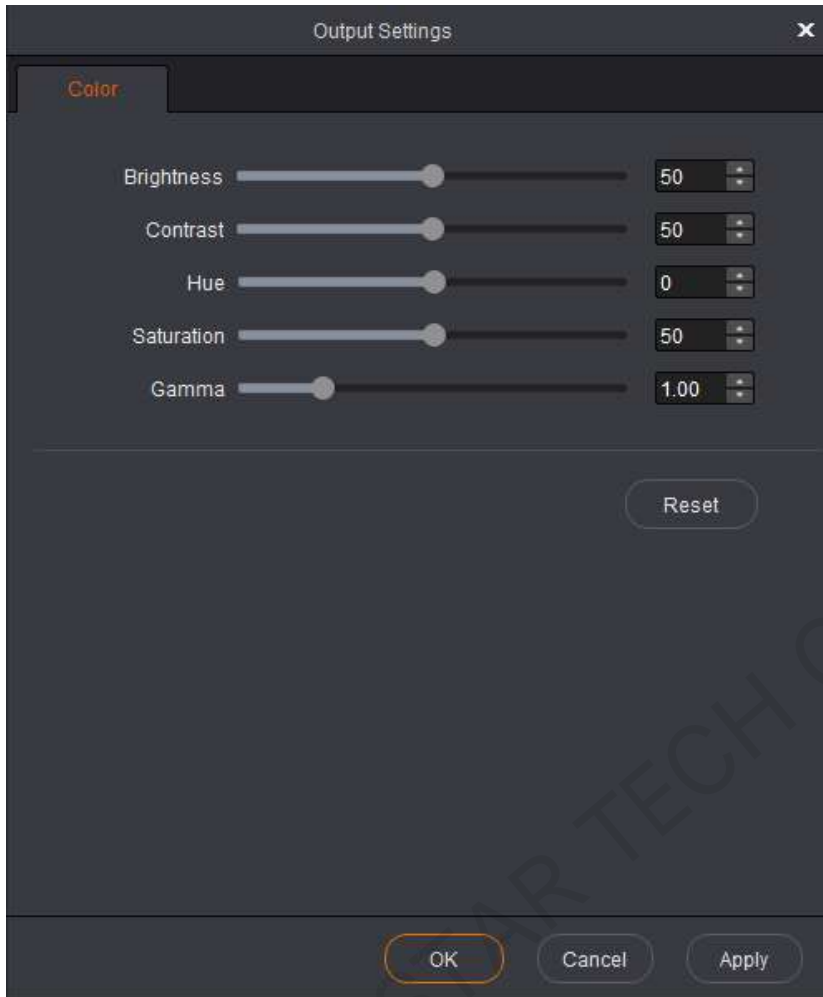
AUX

The NovaPro UHD supports one AUX. You can output any input source, PVW or PGM to a specified display device through the AUX connector.

- Select **Enable** to enable the AUX function. When selected, the following functions will be available.
- Follow Preset: Set whether the AUX follows the preset during switching.
  - − Selected: If the preset has AUX data, the AUX input source will be switched during preset switching.
  - − Deselected: The AUX input source will not be switched during preset switching.
- AUX: Select a desired AUX signal source from the drop-down list.
- AUX Scaling: Set the AUX display mode.
  - − Full Screen: Make the image display in full screen.
  - − Proportional: Scale the image proportionally and then display it on the screen.
- Frame Rate: Set the frame rate for the AUX connector.
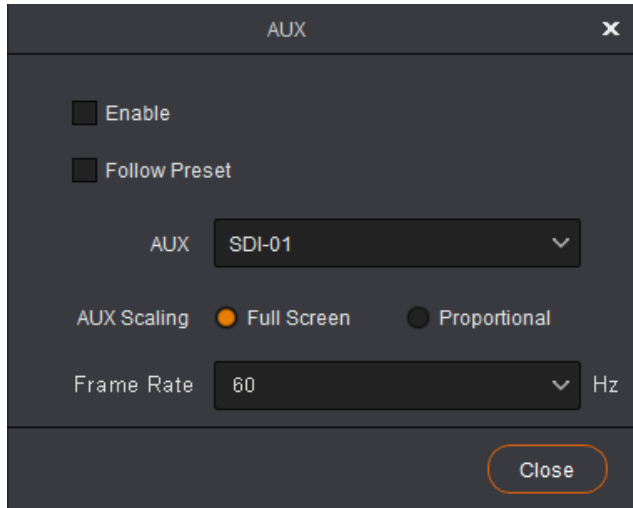
HDR

HDR function can greatly enhance the display image quality, allowing for a more clear and vivid image when the device is used together with NovaStar A8s/A10s Plus receiving cards.
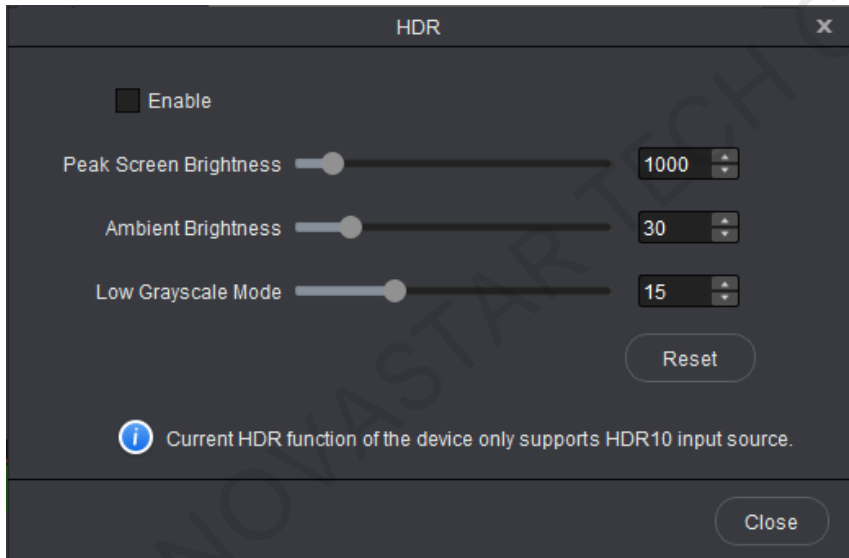
Select **Enable** to enable the HDR function. The HDR parameters are described as followings.

Table 6-2 HDR parameter settings

Menu Item	Description
Peak Screen Brightness	Adjust the screen brightness under normal operation. The value ranges from 100 to 1000, and defautls to **1000**.
Ambient Brightness	Display the ambient brightness. The value ranges from 0 to 200, and defautls to **30**.
Low Grayscale Mode	Adjust the grayscale value of the image displayed on the LED screen. The value ranges from 0 to 50, and defautls to **15**.

MVR

Set the frame rate for the AUX connector.

6.3.3 OSD

On the **Layer** screen, OSD, LOGO and BKG files can be added to the software for easy and direct use in future.

OSD

At most 8 OSD files can be added. You can select image or text as the OSD.

● Adding OSD files

　　a. Click **+** in the **OSD** area to pop up the OSD adding window.

　　　　－ Select **Image** to add a local image as OSD.

　　　　－ Select **Text** to set the font, size and other properties of the text.

Figure 6-14　　Adding OSD images
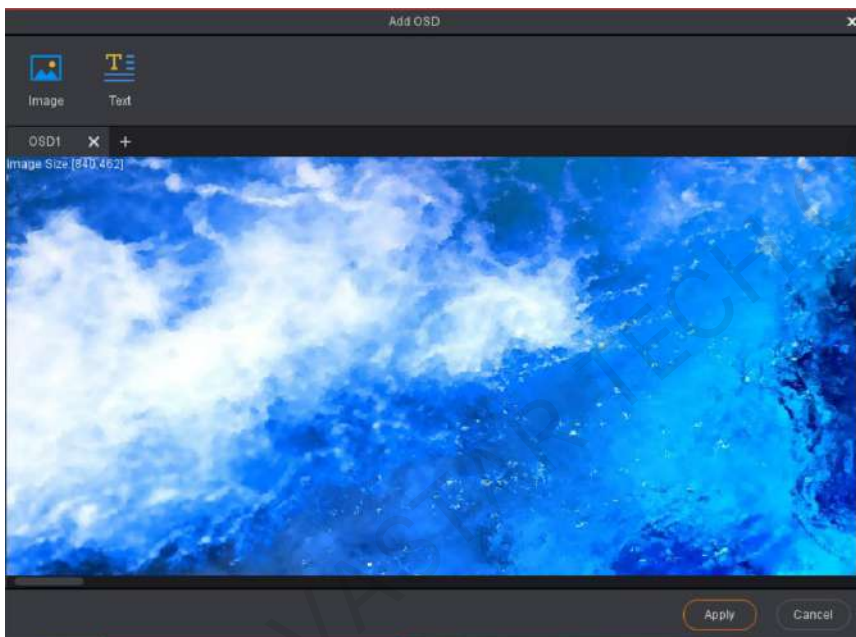
Figure 6-15　　Adding OSD texts
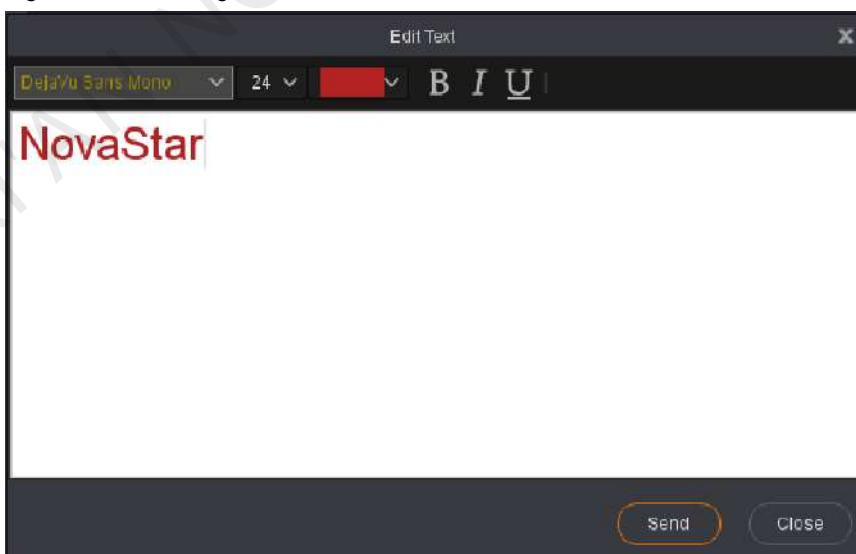
　　b. Click ➕ to add a new OSD file.

　　c. Click **Apply** to save the newly-added OSD files to the software library.

Note:

The OSD text is read from Master VI and cannot be edited.

- Applying OSD files

    a. Select a desired OSD file and click the file to add it to PVW.

    b. In the **PVW** area, click to select an OSD file. Then go to the property setting area on the right to configure the related parameters of the OSD file. The detailed parameter descriptions are shown in Table 6-3.

Table 6-3 OSD parameter descriptions

Parameter	Description	Description
X	Set the horizontal position of the OSD file.	You can also simply use the mouse to drag the OSD file to the desired position.
Y	Set the vertical position of the OSD file.	
Width	Set the width of the OSD file.	There are three ways to change the OSD file size: 1. Drag the edge of the OSD file. 2. Drag the slider of **Width** or **Height**. 3. Enter a width or height number.
Height	Set the height of the OSD file.	
Speed	Set the moving speed of the OSD text.	Drag the slider or enter a value directly to set the speed. The value ranges from 0 to 3. 0: Not moving 3: Moving at the fastest speed
Direction	Set the moving direction of the OSD text. • Right to Left: The text moves from the right to left. • From Left to Right: The text moves from the left to right.	Radio button
Opacity	Set the opacity of the OSD file.	• 100%: Nontransparent • 0%: Transparent

LOGO

At most 16 LOGO files can be added.

- Adding LOGO files

    a. Click **+** in LOGO area to enter the LOGO settings page.

    b. Click **Image** to add local files as the LOGO files.

    c. Click ➕ to add a new LOGO file.

    d. Click **Apply** to save the newly-added LOGO files to the software library.

- Applying LOGO files

    a. Select a desired LOGO file and click the file to add it to PVW.

    b. In the PVW area, click to select an LOGO file. Then go to the property setting area on the right to configure the related parameters of the LOGO file. The detailed parameter descriptions are shown in Table 6-4.

Table 6-4 LOGO parameter descriptions

Parameter	Description	Description
X	Set the horizontal position of the LOGO file.	You can also simply use the mouse to drag the LOGO file to the desired position.
Y	Set the vertical position of the LOGO file.	
Width	-	The width and height cannot be adjusted.

Parameter	Description	Description
Height	-	
Opacity	Set the opacity of the LOGO file.	• 100%: Nontransparent • 0%: Transparent

BKG

At most 16 BKG files can be added.

- Adding BKG files

  a. Click **+** in BKG area to enter the BKG settings page.

  b. Click **Image** or **Capture** to add local files or capture an input source image as the BKG files.

  c. Click ➕ to add a new BKG file.

  d. Click **Apply** to save the newly-added BKG files to the software library.

- Applying BKG files

  Select the desired BKG file and click the file to add it to PVW.

6.3.4 Adding Layers

Step 1 Click to select a signal source on the left.

Right click the edit icon on the right of the signal source to rename the signal source.

Step 2 In the video editing area, click and drag the mouse to create a custom-sized layer.

You can also select a signal source and drag it to the video editing area, and then release the mouse to create a layer.

- When you move the mouse to any edge of the layer and a double-headed arrow appears, you can click and drag the layer edge to adjust the layer size.

- When you move the mouse to the layer area, you can click and drag the layer to change its position.

- When a single layer is selected, you can press the arrow buttons to fine tune the layer position, while hold down the **Shift** key and press the arrow buttons to fine tune the layer size.

- When you move the mouse to the layer top, five buttons appear in the top right corner of the layer. The detailed button functions are shown in Table 6-5.

Table 6-5 Layer buttons

Icon	Description
▪▪ ▪▪	Make the layer fill the screen loaded by the current connector.
▢	Make the layer fill the whole output screen.
✕	Close the layer.
◺	Enable the pixel-to-pixel display mode.
🔓	Unlock the layer.
🔒	Lock the layer.

You can right click the layer to perform the following operations:

- Switch Source: Change the signal source of the layer.

- Bring to Front: Bring the layer to the front.

- Send to Back: Send the layer to the back.

- Bring Forward/Send Backward: Move the layer forward or backward.
- Lock Layer/Unlock Layer: Lock or unlock the layer.
- Close Current Layer: Close the selected layer.
- Close All Layers: Close all the layers.

Setting layer properties

Configure the layer properties in the property setting area on the right where you can configure the layer layout, color and other advanced properties.

- Layout

Parameter	Description
Aspect Ratio	
Aspect Ratio	Set the proportional relationship between the layer width and height.
	After the layer size is adjusted manually, if the aspect ratio does not match any of the listed ratios, the aspect ratio will be the actual aspect ratio of the layer.
Layer	
X	Set the horizontal initial position of the layer.
Y	Set the vertical initial position of the layer.
Width	Set the layer's width.
	After you click ⑤ next to **Width** and **Height**, the width and height will be increased or decreased at the ratio of 1:1. After the height reaches the maximum value, only the width can be changed.
Height	Set the layer height.
Mask	
Top	Mask the layer from top to bottom.
Bottom	Mask the layer from bottom to top.
Left	Mask the layer from left to right.
Right	Mask the layer from right to left.
Crop	
X	Set the horizontal initial position for the input source cropping.
Y	Set the vertical initial position for the input source cropping.
Width	Set the width of the output after cropping.
Height	Set the height of the output after cropping.

- Color

Parameter	Description
Brightness	Adjust the brightness of the output image. The value ranges from 0 to 100.
Contrast	Adjust the contrast of the output image. The value ranges from 0 to 100.
Hue	Adjust the gradation or variety of the output image. The value ranges from –180 to +180.
Saturation	Adjust the purity or vividness grade of the output image. The value ranges from 0 to 100.
Opacity	Adjust the opacity of the output image.
Monochrome	Set the layer image to gray scale image.
Invert Colors	Invert the color to its complementary color that combined with the original color makes white (RGB: 255,255,255).

Parameter	Description
	For example, if the original color is red (RGB: 255,0,0), the inverted color is cyan (RGB: 0, 255, 255).

- Advanced

  Under the **Advanced** tab, you can set the layer shape, layer flipping and copying.

  − Shaped: Select a layer shape from the drop-down list.

  − Flip:

    ➢ Select **Horizontally** to flip the output image horizontally.

    ➢ Select **Vertically** to flip the output image vertically.

    ➢ Select both **Horizontally** and **Vertically** to flip the image both horizontally and vertically

  − Copy: Add a new layer according to the copy mode you select.

    ➢ None: Do not copy the layer.

    ➢ Clone: Add a new layer which is the same as the original one. The two layers are symmetric horizontally by default.

    ➢ Left Mirror: Add a mirrored layer on the left of the original layer. The two layers display mirrored images.

    ➢ Right Mirror: Add a mirrored layer on the right of the original layer. The two layers display mirrored images.

    ➢ X: Set the horizontal initial coordinate of the new layer.

6.3.5 Preset Settings

Up to 16 presets are supported. The preset will be saved in the system automatically after you have completed a preset settings, which is easier for future use.

A preset not only contains layer data, but also saved BKG, LOGO or OSD data.

Step 1 After the layer settings, click **Preset** to enter the preset page.

Step 2 Right click the desired preset.

Step 3 Select **Save** to save the layer data to the preset.

: The preset with no data saved

: The preset with data saved

: The preset being edited currently

: The preset loaded currently

- Select a saved preset, and click **Load** to load the preset to PVW.

- Select a saved preset, and click **Clear** to clear the preset data.

- Click **Clear All** to clear all the presets.

Note:

Double click a preset to rename it. Only the saved preset can be renamed.

If you hover on a preset icon, the preset name is displayed.

6.3.6 Image Mosaic

When you need to drive a large screen which exceeds the loading capacity of a single NovaPro UHD unit, the image mosaic function offers you a good choice. You can link two or more device units to meet your requirements.

The following figure illustrates the image mosaic function with two NovaPro UHD units.

Figure 6-16   Image mosaic
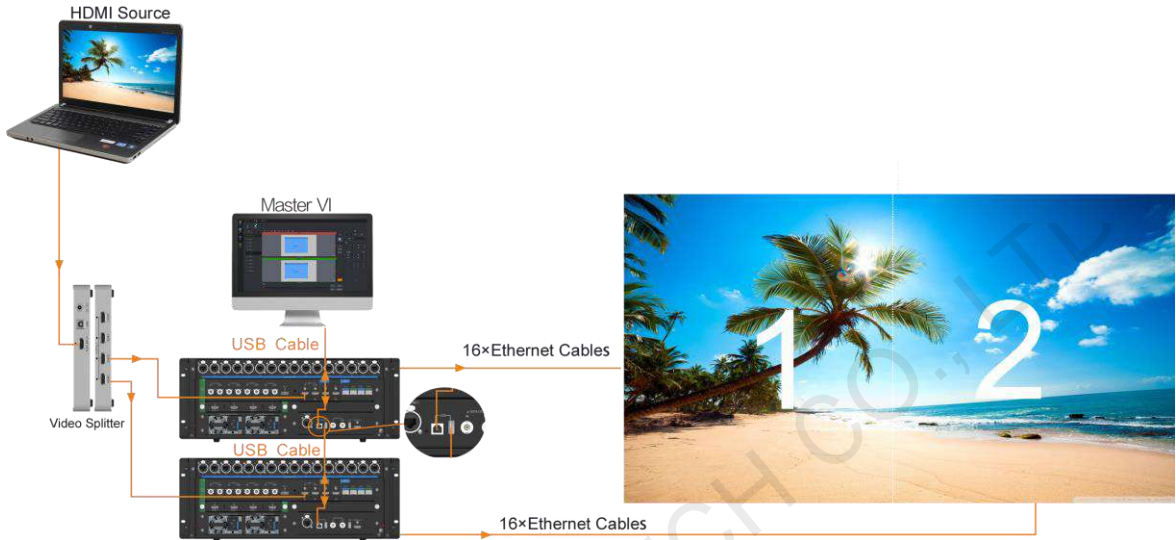
Step 1   After all the required device units are connected, Master VI will connect all the units automatically.

Step 2   Click the **Device** tab on the left of the **Layer** page to show the device list.

Step 3   Click a device and drag it to a desired device for image mosaic. After the action, a mosaic group is formed as shown in Figure 6-17. The mosaic group will be named automatically by the system.

- Click [icon] next to the mosaic group name to rename the group.

- Click [icon] next to the device name to remove the device from the group.

Figure 6-17   Image mosaic
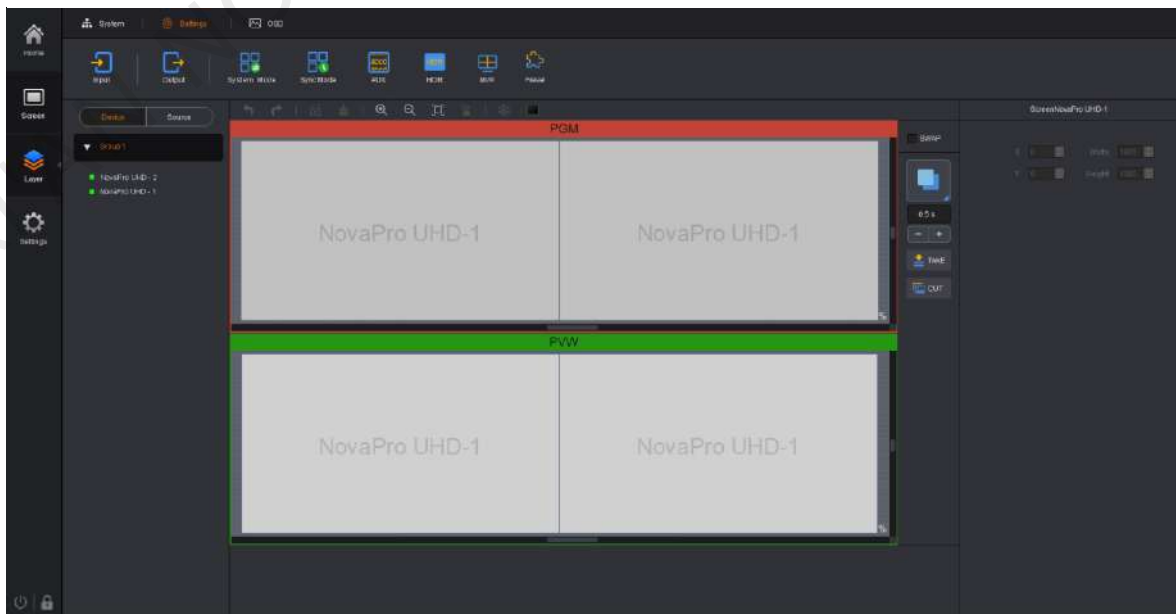
Step 4   In the PVW area, click and drag NovaPro UHD-1 or NovaPro UHD-2 to change the mosaic layout.

Step 5   Click the **Source** tab on the left to shown the signal sources.

- Green: The same connectors on all the devices in the mosaic group are accessed with an input source.

- White: No input source is connected to the connectors, or one or more device connectors in the mosaic group are not accessed with input sources.

Step 6 Click and drag an input source signal on the left to the PVW area to add a layer.

Note:

When the layer locates within one device area and does not cross any more devices, the layer occupies the layer resources of the current device.

When the layer crosses multiple devices, the layer occupies the layer resources of all devices it crosses.

After a layer is added, the device mosaic layout cannot be changed. If you need to change the mosaic output, please delete the layer first.

6.4 Settings
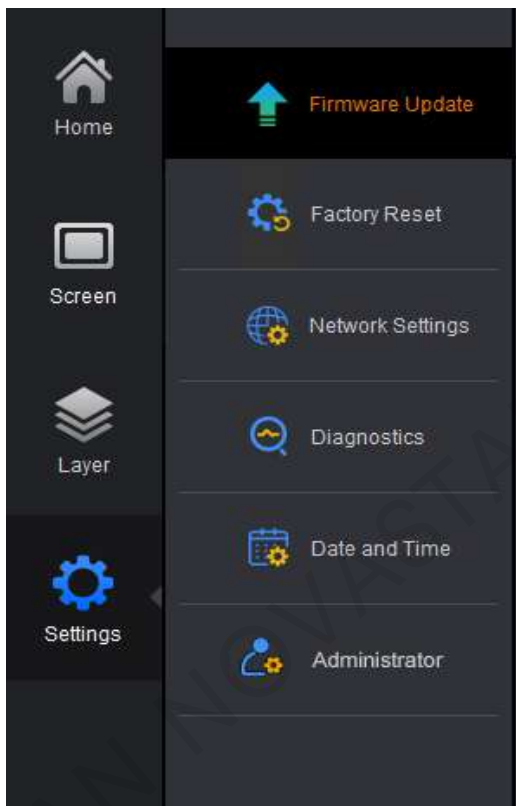
- Firmware Update: Update the firmware through a USB drive. Click [...] to select the upgrade file.

- Factory Reset: When multiple device units are linked, select the device to be reset from the drop-down list and reset all its parameters to defaults.

    - Save IP: Reset the device parameters to factory settings, but save the device IP address.

    - Reset all: Reset all the device parameters to factory settings.

- Network Settings: Select **DHCP** or **Static** and set the device IP address, subnet mask and gateway of the device.

- Diagnostics: Diagnose the device when the device fails and send the result to the technical support of NovaStar to solve the problems as soon as possible.

- Date and Time: Set the device date and time.

- Administrator: Set or change the user password.

7 **Web Operations**

7.1 Overview

The NovaPro UHD allows for the controlling on a PC. You can set the device related parameters through a web browser. The settings are the same as that of the device front panel.

The supported web browsers include:

- Chrome 76 or later version
- Safari 10 or later version

Note:

When you use a PC to control the device, the device front panel buttons are locked and a lock icon appears on the front panel screen.

7.1.1 Device Connection

Hardware connections for device control on a PC are as follows.

- Direct connection

  Connect the Ethernet port of the PC to the Ethernet port of the device with an Ethernet cable.
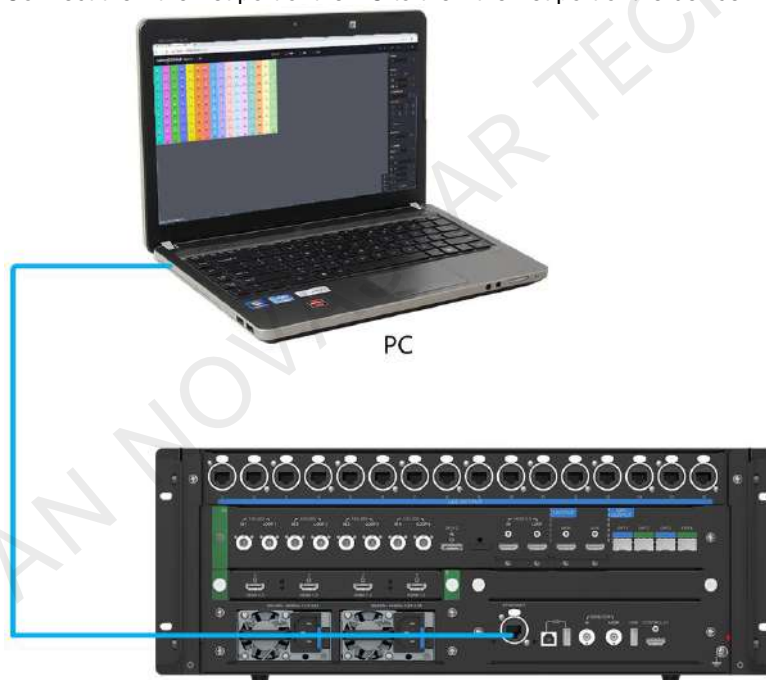
- Using a router

  Connect the Ethernet ports of the device and PC to the LAN ports of the router.
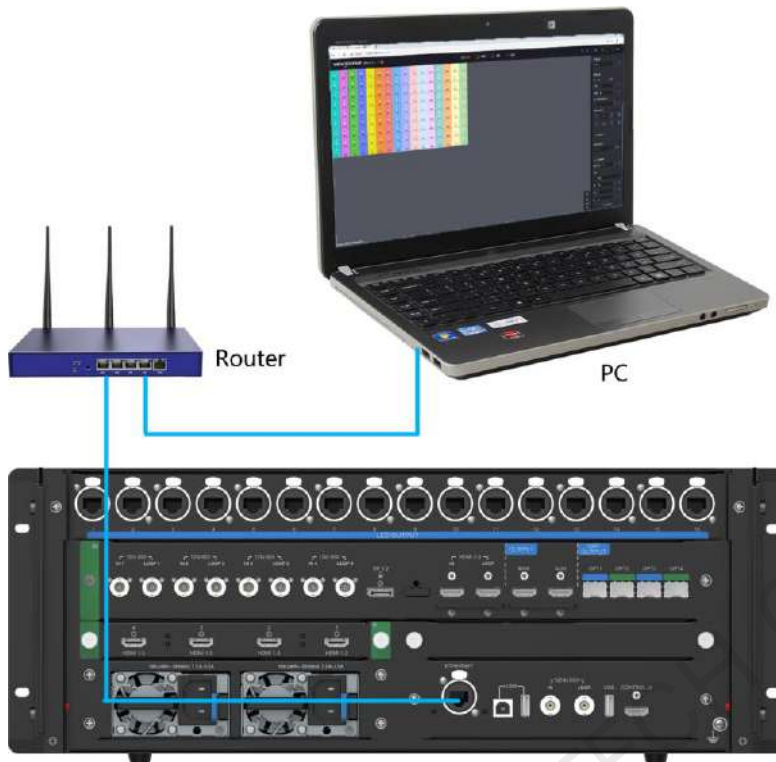
7.1.2 Web Page Login

Step 1 Open the suggested web browser on your computer, and enter "http://the device IP address" into the address bar.

Step 2 Press **Enter** and the browser will jump to the login interface of the Web page.

Step 3 Enter the login password.

Note:

The default password is "88888888". You can go to **Settings** > **Change Password** to change the password after login.

Step 4 Click **Login** to log in to the Web page.

7.1.3 Web UI Introduction

- Configuration: Set the LED screen loaded by the NovaPro UHD. The settings include LED screen brightness, quick configuration, advanced configuration, mapping, cabinet configuration file applying and LED screen color.

- Programming: Perform the layer and layer-related properties settings, BKG management, preset saving and loading, black out and freeze of the screen.

- Preset: Load, copy and paste, rename, import and export the presets.

- Settings: Set the output, AUX, test pattern, synchronization, system mode, network, HDR, low latency, firmware update, date and time, as well as factory reset.

- : Refresh and synchronize the device configuration information.

- Language: Change the UI language. English and Chinese are supported.

- Exit: Log out of the Web page.

7.2 Screen Configuration

7.2.1 Screen Brightness

Step 1　Click **Configuration** to enter the screen configuration page.

Step 2　In the text box below **Screen Brightness**, enter a brightness value directly.

　　　　The brightness value will be sent to the device in real time, and the LED brightness will be changed accordingly.

　　　　You can also click **+** or **-** to fine tune the value.

Figure 7-1　Screen brightness adjustment

Screen Brightness

| 10 | — | + |
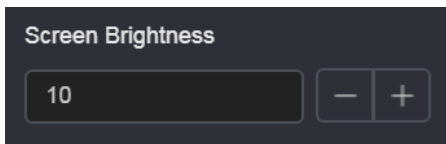
0: The lowest brightness (the screen is black)

100: The highest brightness

7.2.2 Screen Configuration

7.2.2.1 Quick Configuration

Prerequisites

- LED screen must be a regular screen.

- Cabinets of the screen must be regular cabinets with the same resolution.

- The following data flow settings are supported. During data flow settings, you must ensure that the physical connection of each port is along the same direction and downward to next one.

- During data flow settings, you must ensure that the Ethernet Port 1 is at the beginning position of the whole physical connection.

- The quantity of cabinets loaded by each Ethernet port must meet the following requirement: Ethernet port 1 ≥ Ethernet port 2 ≥ Ethernet port 3 ≥ Ethernet port 4 ≥ ... ≥ Ethernet port 16

- The quantity of cabinets loaded by each Ethernet port must be an integer multiple of the screen cabinet row quantity or column quantity.

Operating Procedure

Step 1 Click **Configuration** to enter the screen configuration page.

Step 2 In the Screen Configuration area, select Quick.

Figure 7-2 Quick configuration
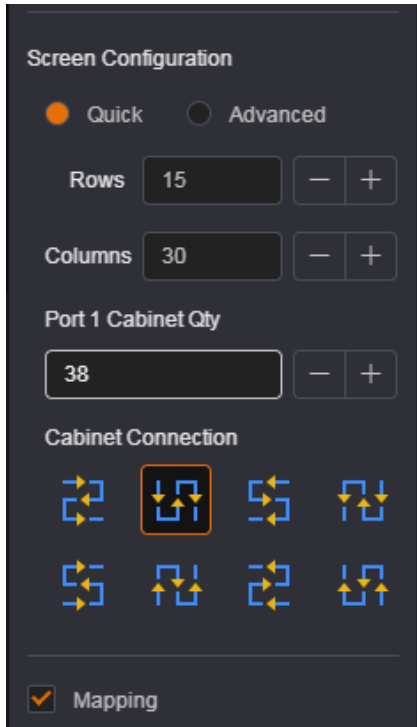
Step 3 Fill the numbers in the **Rows** and **Columns** text boxes according to the actual row and column quantities of the cabinets of the LED screen.

Step 4 Fill the number in the **Port 1 Cabinet Qty** text box to set the quantity of the cabinets loaded by Ethernet port 1.

Step 5 Select an appropriate physical connection mode of the cabinets in the **Cabinet Connection** area.

When a cabinet connection is selected, you can view the real-time effect on LED screen. If all the cabinets of the screen display normally, that is, no overlapping or repeated images, the cabinet connection is correct.

Note:

Select **Mapping** to show the relation between each cabinet of the LED screen and the sending device for easier cabinet connection.

7.2.2.2 Advanced Configuration

You can set the quantities of the rows and columns of the cabinets loaded by each Ethernet port, the cabinet connection, as well as the offset of the area loaded by each Ethernet port, so as to complete the whole LED screen configuration.

Step 1   Click **Configuration** to enter the screen configuration page.

Step 2   In the Screen Configuration area, select Advanced.

Figure 7-3 Advanced configuration
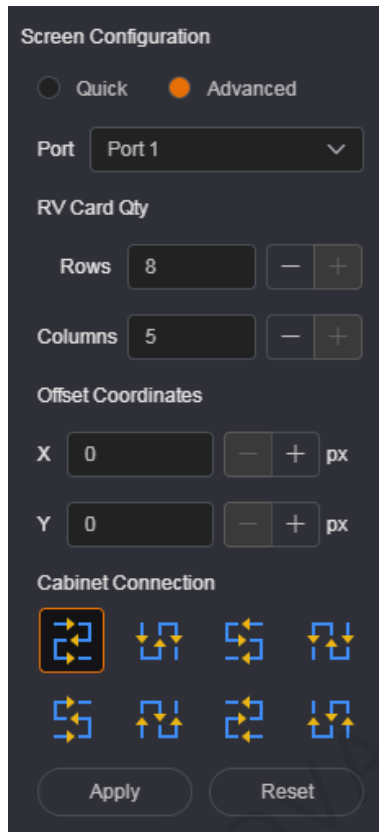
Step 3   Select an Ethernet port from the drop-down list next to **Port**.

Step 4   Fill the numbers in the **Rows** and **Columns** text boxes to set the quantities of the rows and columns of the cabinets loaded by the selected Ethernet port.

Step 5   Fill the numbers in the **X** and **Y** text boxes to set the starting position of the cabinets loaded by the selected Ethernet port, that is, the offset of these cabinets. The offset adjustment reference is the top-left corner of these cabinets.

Step 6   Select an appropriate physical connection mode of the cabinets loaded by the selected Ethernet port in the **Cabinet Connection** area.

When a cabinet connection is selected, you can view the real-time effect on LED screen. If all the cabinets of the screen display normally, that is, no overlapping or repeated images, the cabinet connection is correct.

Note:

Select **Mapping** to show the relation between each cabinet of the LED screen and the sending device for easier cabinet connection.

Step 7   Repeat Step 3 to Step 6 to do the same for other Ethernet ports to complete the whole LED screen configuration.

Step 8   Click **Apply** to make the settings take effect.

Click **Reset** to clear all the settings.

7.2.3 LED Screen Color

Gamma

Set the Gamma value to adjust the output image quality.

Figure 7-4 LED screen color adjustment
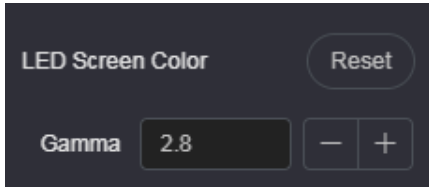
The Gamma value ranges from 1.0 to 4.0, and defaults to 2.8.

Color Temperature

Set the image color to **Standard**, **Cool**, **Warm** and **Custom**. Custom allows you to adjust the individual R, G and B values.

Figure 7-5 Color temperature
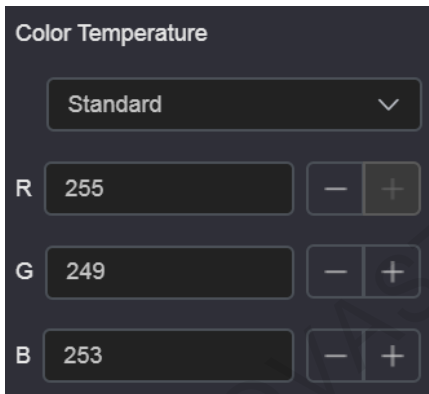
7.2.4 Save to RV Card

After you completed all the preceding settings, click **Save to RV Card** to save the screen configuration data to the receiving card. You can use those data directly next time, rather than send it to the receiving card again.

7.3 Programming

Click **Programming** to enter the programming page where you can add, delete and edit layers, BKG, OSD and LOGO files.

Figure 7-6 Programming
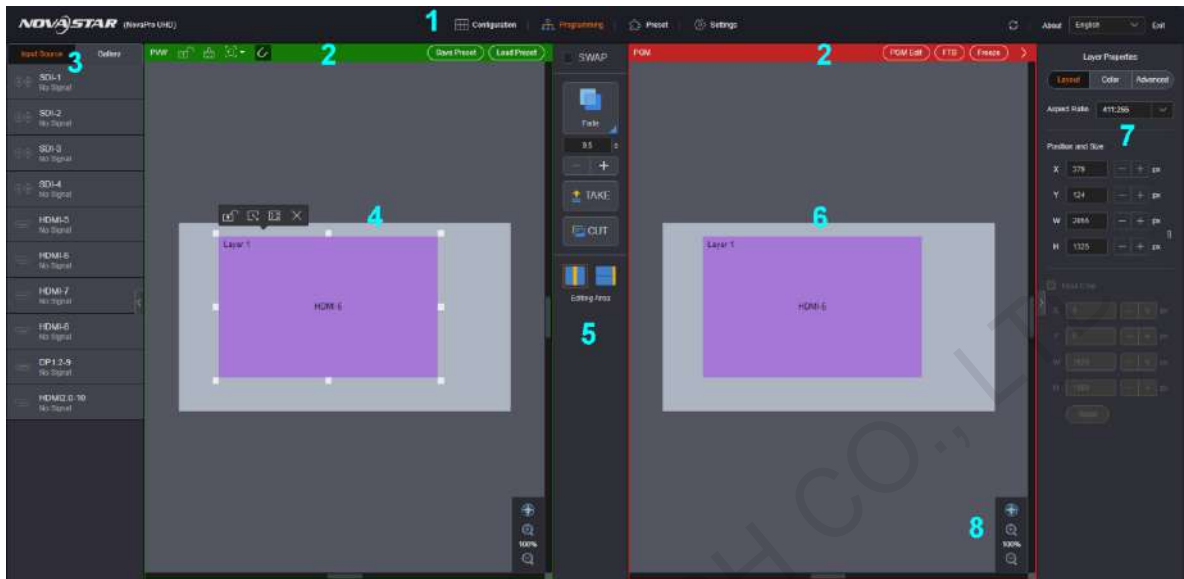
Table 7-1 Programming page descriptions

No.	Description
1	All the function tabs
2	Shortcut keys • 🔓 / 🔒: Lock or unlock all the layers, BKG, OSD and LOGO files in the editing area. • 🧹: Clear all the added layers, BKG, OSD and LOGO files in the editing area. • ↻: Restore the selected layer or all the layers to default size, that is, 800×600. − Restore all layers The layer with the lowest priority starts from the top left corner (starting point), and every subsequent layer gets a 50-pixel offset both horizontally and vertically from its previous layer. − Restore the selected layer Restore the selected layer to the top left corner. • 𝒰: The snap function is enabled by default. This function makes the layer snap to another layer edge or screen edge when it moves close to another layer or the screen. • Save Preset: Save the current layer layout and settings to a target preset for future use. • Load Preset: Load a saved preset to the LED screen. • PGM Edit: Enable or disable the PGM editing function. • Black: Make the output image go black. • Freeze: Freeze the current frame of the output image.
3	Input source list and BKG/OSD/LOGO list Input source status descriptions: • Highlighted: The input source is accessed and normal. • Not highlighted: The input source is not accessed or abnormal.
4	PVW area

No.	Description
5	Set the transition-related settings. • SWAP: When selected, click **TAKE** or **CUT** to interchange the PVW and PGM display. When deselected, the PVW and PGM displays are the same. • Cut: Set the PVW to PGM transition effect. • [13 s − +]: Set the transition duration. Enter a value directly in the text box or click +/- to adjust the value. The value ranges from 0.5s to 2.0s and defaults to 0.5s. • TAKE: Send the PVW to PGM with a transition effect. • CUT: Send the PVW to PGM without a transition effect. • Editing Area: Set the layout for the PVW and PGM area. The supported layouts are [ ] and [ ].
6	PGM area
7	Properties setting area Set the layer properties, input crop and other items if needed.
8	Zoom options in the editing area • ⊕: Restore the editing area to original view after the area is zoomed out or in. • ⊕: Zoom in the editing area. • ⊖: Zoom out the editing area.

7.3.1 Input Settings

The DP and HDMI connectors support custom and standard resolution settings. Here, we use HDMI connector as an example to illustrate the input settings.

Step 1   Hover the mouse over the desired input connector and an icon ⚙ appears on the right of the input source name.

Step 2   Click ⚙ to enter the input settings page.

Figure 7-7 Input settings
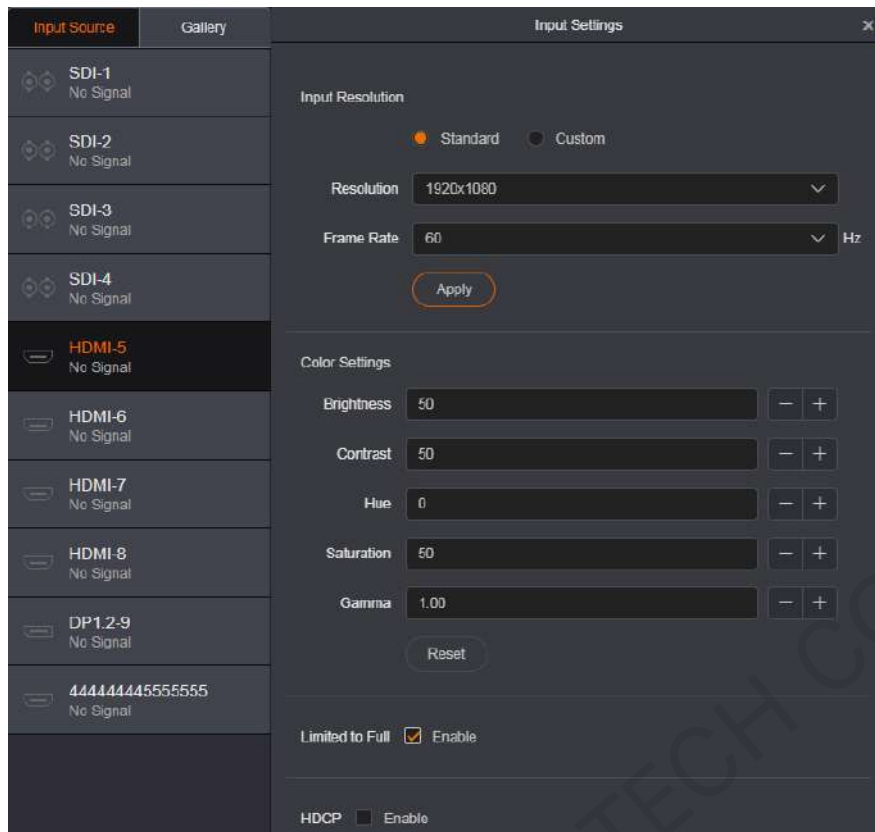
Step 3 Set the input resolution.

The DP and HDMI connectors support custom and standard resolution settings.

● Standard resolution

  a. Select **Standard**.

Figure 7-8 Standard resolution
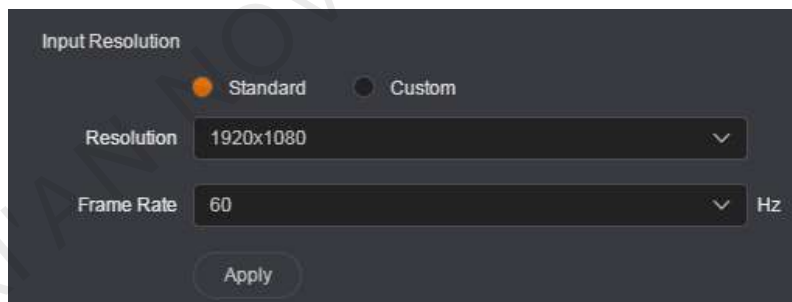
  b. Select an input resolution from the drop-down list next to **Resolution**.

  c. Select a frame rate from the drop-down list next to **Frame Rate**.

  d. Click **Apply** to complete the standard resolution settings.

● Custom resolution

  a. Select **Custom**.

Figure 7-9 Custom resolution

b. Enter a value in the **Width** text box.

c. Enter a value in the **Height** text box.

d. Select a frame rate from the drop-down list next to **Frame Rate**.

e. Click **Apply** to complete the custom resolution settings.

Step 4 Enable or disable the color range converting function for the input source.

The color range (RGB) of the input source is full by default. If the input source color range is RGB Limited, select **Enable** and the device will convert the color range to RGB Full.

Step 5 Enable or disable the HDCP function.

When the HDMI input source is HDCP-encrypted, select **Enable**; otherwise, deselect **Enable**.

Note:

Only HDMI connector supports HDCP settings.

7.3.2 Adding Layers

Step 1   Select a desired input source from the **Input Source** list.

Step 2   Click the editing area and drag the mouse to create a custom-sized layer.

You can also select an input source and drag it to the editing area, and then release the mouse to create a layer. The layer input source is the source you selected previously.

Figure 7-10   Adding layers
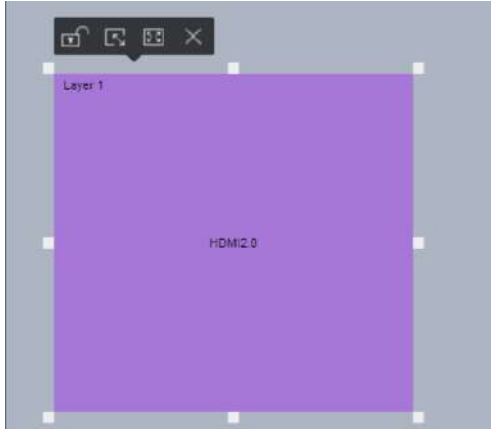
Table 7-2 Layer icon descriptions

Icon	Name	Description
🔒	Unlock layer	When the layer is locked, click this icon to unlock the layer.
🔓	Lock layer	Click this icon to lock the layer.
↖	Pixel to pixel	In pixel to pixel mode, the layer size is the same as the current input image resolution.
↘	Close pixel to pixel	Click this icon to exit the pixel to pixel mode and display the input source in its orignal size.
⤢	Full screen	Click this icon to make the current layer display in full screen.
⤡	Close full screen	Click this icon to exit the full screen mode and restore the current layer to its original size.
✕	Close layer	Click this icon to close the current layer.

Click any of the small white squares on the layer edges and drag the square to adjust the layer size.

Right click the layer and you can perform the following operations as required.

Figure 7-11   Layer operations
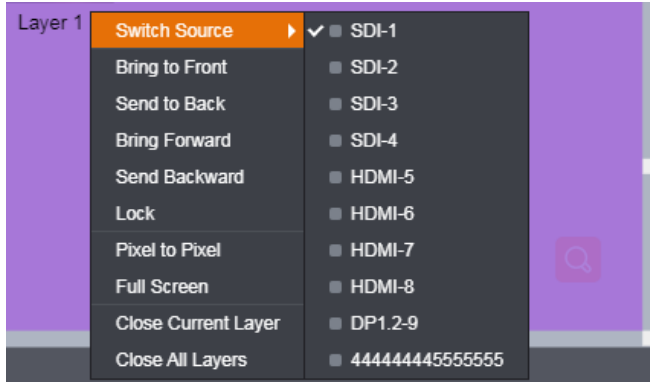
- Switch Source: Switch the input source for the current layer.

- Bring to Front/Send to Back: Bring the selected layer to front, or send the selected layer to back.

- Bring Forward/Send Backward: Move the layer up or down to adjust the layer priority.

- Pixel to Pixel: In pixel to pixel mode, the layer size is the same as the current input image resolution. Layer scaling is disabled in this mode.

- Full Screen: Make the layer display in full screen.

- Close Current Layer: Close the selected layer.

- Close All Layers: Close all the layers in the editing area.

7.3.2.1 Layer properties

After a layer is added, the **Properties** pane on the right is available when you click the layer.

Figure 7-12   Setting layer properties
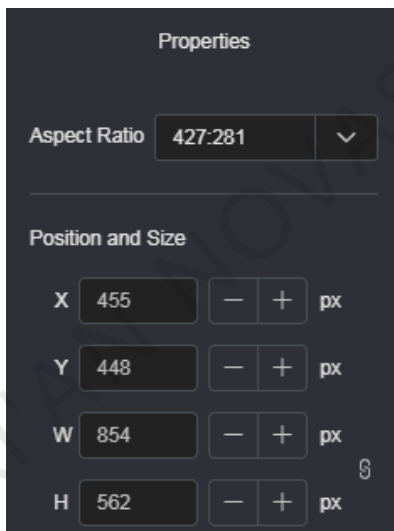
- **Aspect Ratio**: Adjust and show the proportional relationship between the layer width and its height. Select a desired aspect ratio from the drop-down list next to **Aspect Ratio**.

  If the layer the width remains the same during the adjusting process, the height will be changed based on the set aspect ratio.

  When you manually adjust the layer size in the editing area, the **Aspect Ratio** area displays the actual layer aspect ratio.

- **Position and Size**: Adjust the layer position and size on the screen.

  - X: Set the horizontal coordinate of the layer top-left corner on the screen.

  - Y: Set the vertical coordinate of the layer top-left corner on the screen.

  - W: Set the layer width.

– H: Set the layer height.

Note:

Click ![icon] next to the width and height to lock the layer aspect ratio. The icon changes to ![icon] when the ratio is locked. If you change the layer width or height at this time, the other parameter changes accordingly based on the locked aspect ratio.

7.3.2.2 Input Crop

If you want to view a certain area of the input source image, crop the input source image and make the desired part display in full screen.

Select **Input Crop** to turn on the function. If no signal is detected, the function is unavailable.

Figure 7-13   Input crop
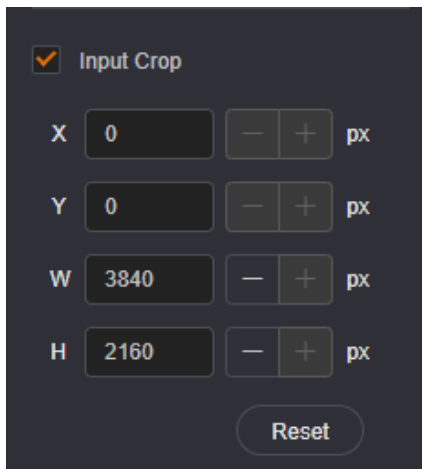
- X: Set the horizontal initial position for the input source cropping. The value ranges from 0 to the horizontal width of the input source, and defaults to **0**.

- Y: Set the vertical initial position for the input source cropping. The value ranges from 0 to the vertical height of the input source, and defaults to **0**.

- W: The horizontal width of the current input source. If no signal is detected, it defaults to **1920**.

- H: The vertical height of the current input source. If no signal is detected, it defaults to **1080**.

The effect is shown as follows after the cropping.

Figure 7-14   Input crop effect

Input Source: 1920×1080@60Hz   Layer Size: 1920×1080
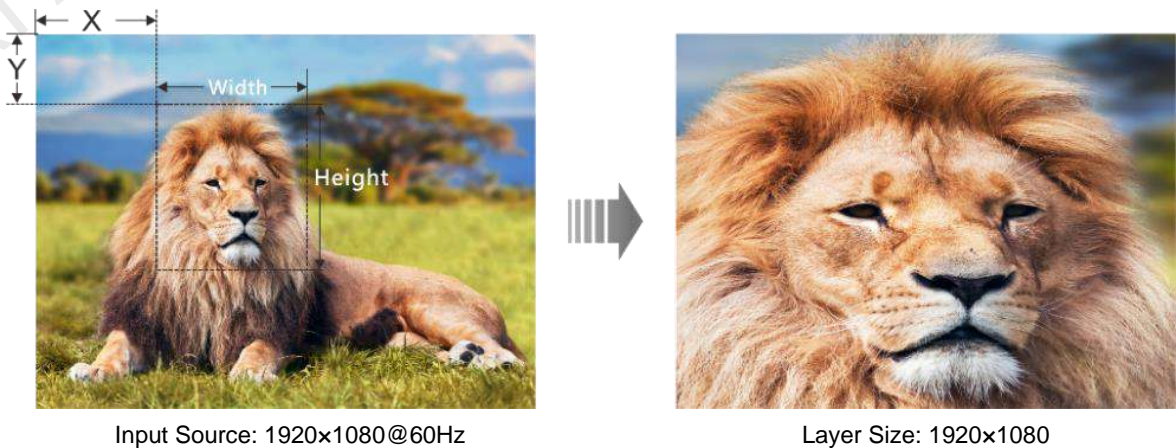
7.3.3 BKG

7.3.3.1 Adding BKG

Add BKG images to the Web page and send those images to the NovaPro UHD. The NovaPro UHD supports BKG images and pure color BKG.

BKG Images

Step 1   On the **Programming** page, click the **Gallery** tab on the left and select **BKG** show the BKG list.

Figure 7-15   BKG list
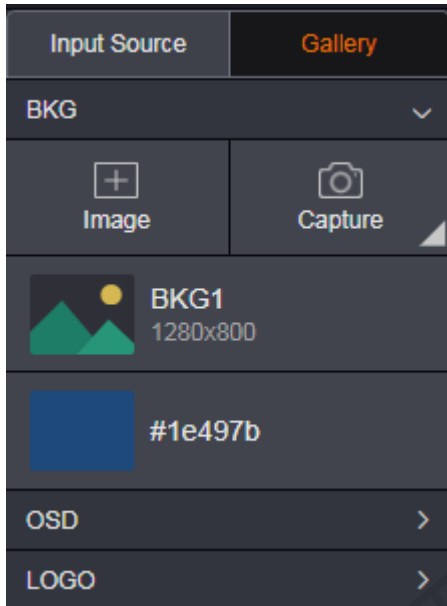
Step 2   Click **Image** to pop up a window where you can select a BKG image.

Step 3   Select a desired local image, and then click **Open** to pop up the BKG settings window.

If you want to capture an input source image, click **Capture** and click [O] next to the input source name in the input source list that appears.

Figure 7-16   BKG settings
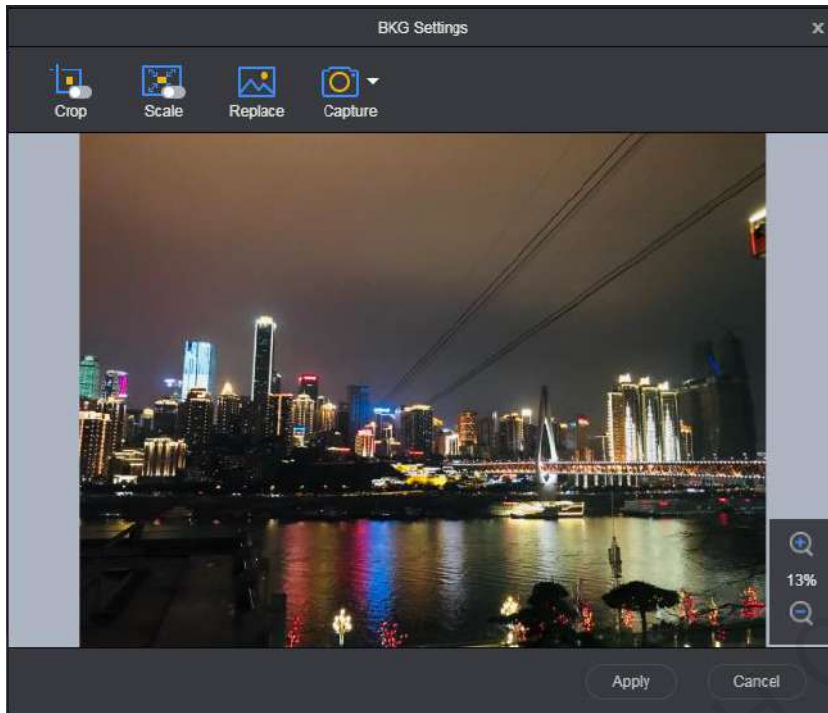
- Crop: Crop the imported BKG image and use the cropped image as the BKG.

  The highlighted area is the area to be kept. Click and drag the area to change its position, and drag its edge to change its size.

  After the settings, click ❌ at the bottom-right corner of the area to cancel the selection, or click ✅ to confirm the settings.

- − Initial X: Set the horizontal initial coordinate of the top-left corner of the cropped area on the original image.
- − Initial Y: Set the vertical initial coordinate of the top-left corner of the cropped area on the original image.
- − Width: Set the width of the cropped image.
- − Height: Set the height of the cropped image.
- Scale: Scale the imported image.

- Keep aspect ratio: After this item is selected, when you adjust the width or height, the system will automatically calculate the height or width based on the set aspect ratio.

- Width: The BKG image width after scaling

- Height: The BKG image height after scaling

- Replace: Select a new BKG image and replace the current one.

- Capture: Capture the current frame of the selected input source and use the captured image as the BKG image.

Step 4 Click **Apply** to save the edited BKG image to BKG list and send the BKG image to the NovaPro UHD.

Pure Color BKG

Move the cursor to a pure color in the BKG list and click the arrow icon that appears, and then select a color from the displayed dialog box.

Click **More Colors** to customize a color.

Figure 7-17   Pure Color BKG
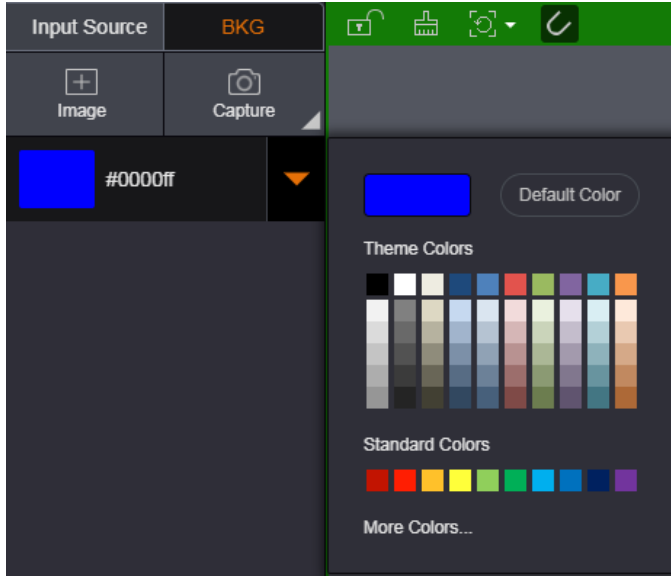
7.3.3.2 BKG Operations

Loading BKG

Click a BKG in the BKG list to load the BKG image to the editing area. The BKG is always located at the bottom and displayed in full screen. The BKG priority and size cannot be adjusted.

Click ☒ at the top-right corner of the BKG to delete it.

BKG Operations

● BKG list operations

Hover the mouse over the BKG list to show the BKG operation menu.
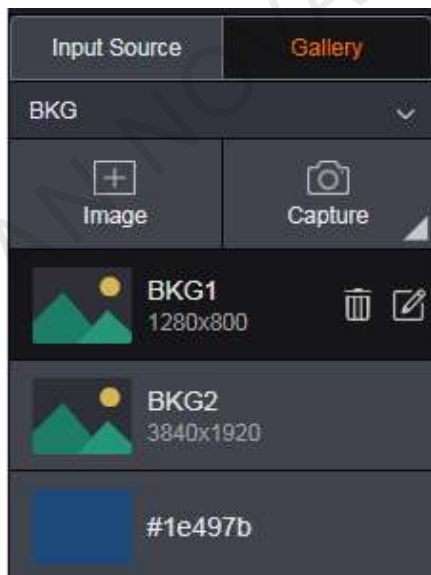
－ Deleting BKG

Click 🗑 next to a BKG and select **OK** in the displayed dialog box to delete the selected BKG.

－ Editing BKG

Click 🖉 next to a BKG to pop up the BKG settings window to re-edit or replace the current BKG.

- BKG operations in PVW area

  After a BKG is added to the PVW area, you can lock, unlock or read back the BKG.

  − Locking or unlocking BKG

    Right click the BKG and select **Lock** in the context menu to lock the BKG. After locked, the BKG cannot be deleted.

    After locked, right click the BKG and select **Unlock** in the context men to unlock the BKG. After unlocked, the BKG can be deleted.

  − Reading back BKG

    When you refresh the Web page or log in to the system again, the PVW area does not display the BKG image. Right click the BKG and select **Read Back** to display the BKG in the PVW and PGM area.

7.3.4 OSD

7.3.4.1 Adding OSD

Add OSD files to the Web page and send those images to the NovaPro UHD. The NovaPro UHD supports OSD images and OSD texts.

OSD Images

Step 1 On the **Programming** page, click **OSD** on the left to show the OSD list.

Figure 7-18   OSD list
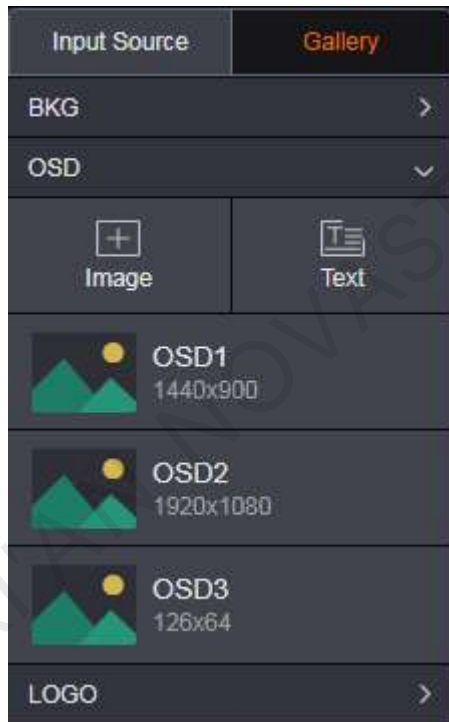
Step 2 Click **Image** to pop up a window where you can select an OSD image.

Step 3 Select a desired local image, and then click **Open** to pop up the OSD settings window.
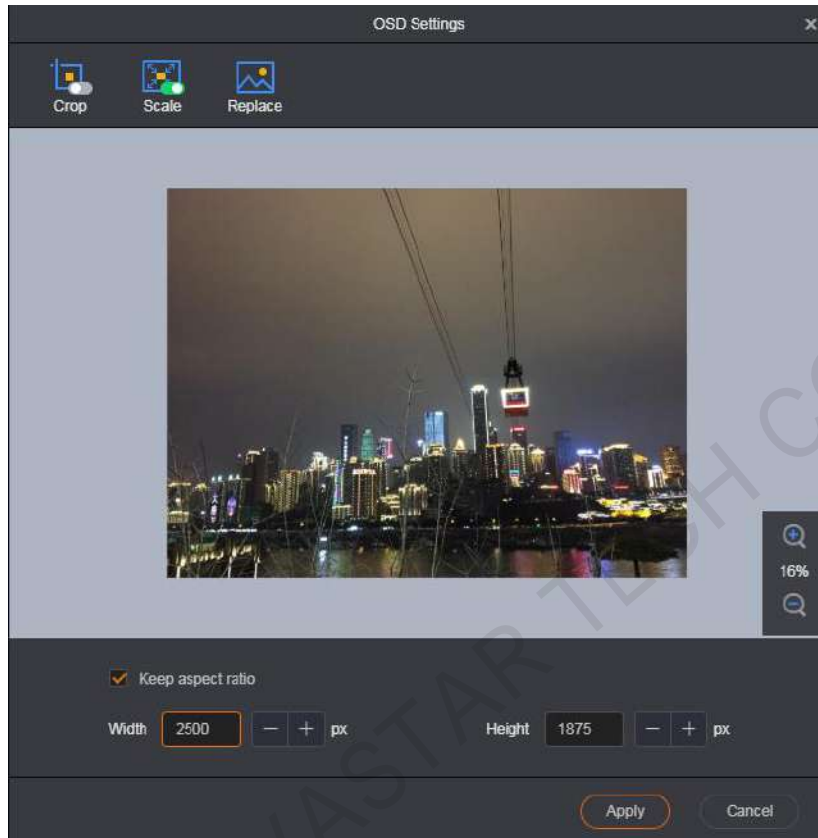
Figure 7-19   OSD settings
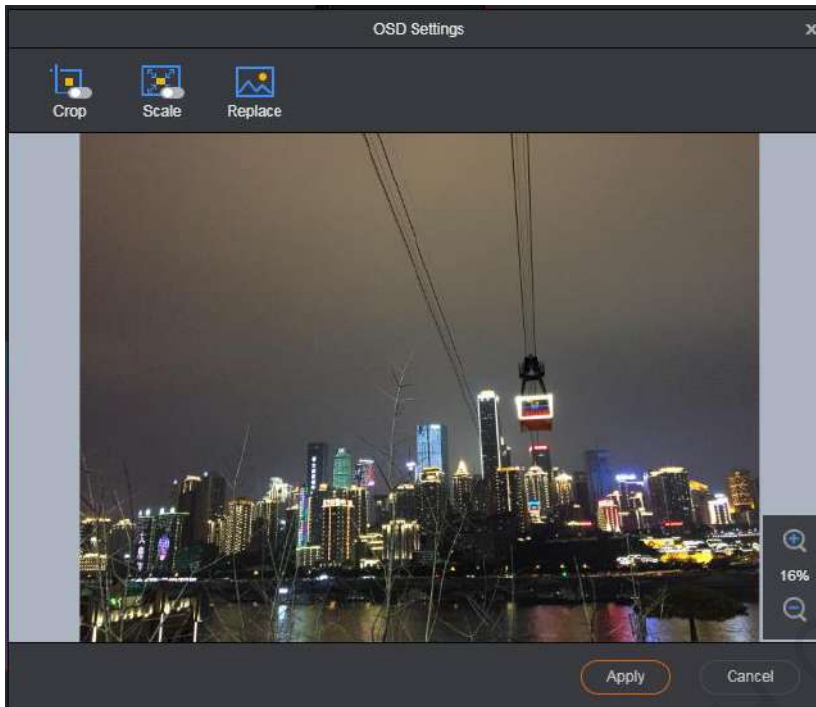
● Crop: Crop the imported OSD image and use the cropped image as the OSD.

The highlighted area is the area to be kept. Click and drag the area to change its position, and drag its edge to change its size.

After the settings, click ✖ at the bottom-right corner of the area to cancel the selection, or click ✔ to confirm the settings.

- − Initial X: Set the horizontal initial coordinate of the top-left corner of the cropped area on the original image.
- − Initial Y: Set the vertical initial coordinate of the top-left corner of the cropped area on the original image.
- − Width: Set the width of the cropped image.
- − Height: Set the height of the cropped image.

● Scale: Scale the imported image.

- − Keep aspect ratio: After this item is selected, when you adjust the width or height, the system will automatically calculate the height or width based on the set aspect ratio.
- − Width: The OSD image width after scaling
- − Height: The OSD image height after scaling

● Replace: Select a new OSD image and replace the current one.

Step 4   Click **Apply** to save the edited OSD image to OSD list and send the OSD image to the NovaPro UHD.

OSD Text

Click **Text** to pop up a window where you can set the OSD text properties.

Figure 7-20   OSD text
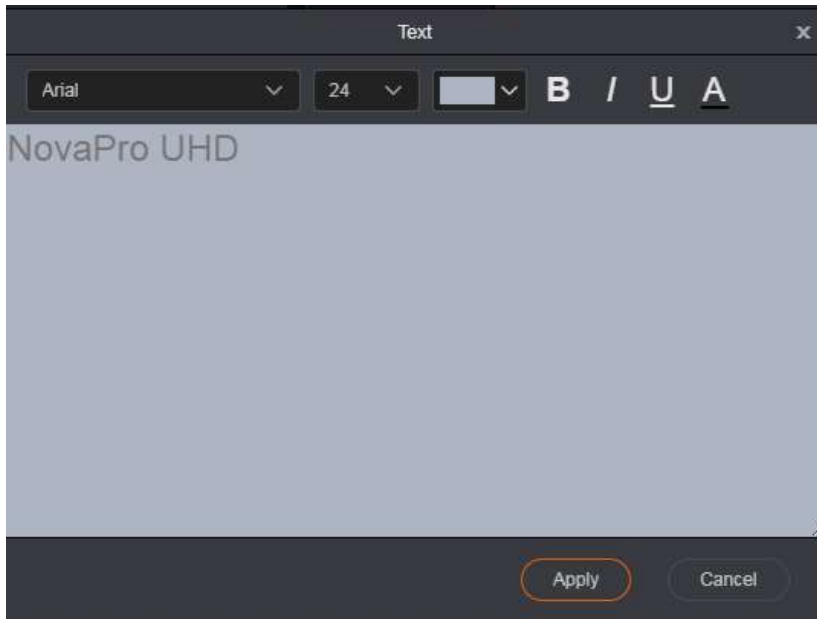
7.3.4.2 OSD Operations
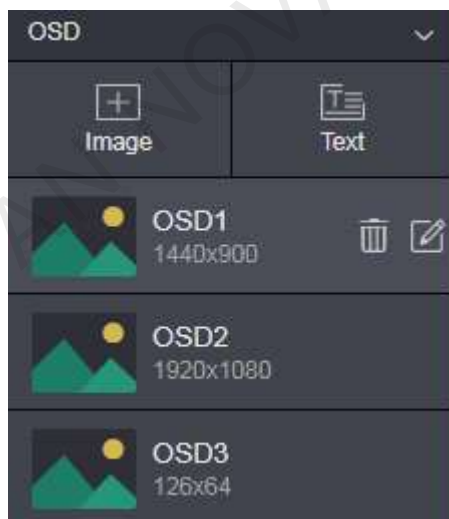
Loading OSD

Click an OSD in the OSD list to load the OSD image to the editing area. The OSD priority and size can be adjusted.

Click ☒ at the top-right corner of the OSD to delete it.

OSD Operations

- BKG list operations

  Hover the mouse over the OSD list to show the OSD operation menu.

  − Deleting OSD

    Click 🗑 next to an OSD and select **OK** in the displayed dialog box to delete the selected OSD.

  − Editing OSD

    Click ✎ next to an OSD to pop up the OSD settings window to re-edit or replace the current OSD.

- OSD operations in PVW area

After an OSD is added to the PVW area, you can lock, unlock or read back the OSD.

− Locking or unlocking OSD

Right click the OSD and select **Lock** in the context menu to lock the OSD. After locked, the OSD cannot be deleted.

After locked, right click the OSD and select **Unlock** in the context men to unlock the OSD. After unlocked, the OSD can be deleted.

− Reading back OSD

When you refresh the Web page or log in to the system again, the PVW area does not display the OSD image. Right click the OSD and select **Read Back** to display the OSD in the PVW and PGM area.

7.3.5 LOGO

7.3.5.1 Adding LOGO

Add LOGO images to the Web page and send those images to the NovaPro UHD.

Step 1 On the **Programming** page, click **LOGO** on the left to show the LOGO list.

Figure 7-21 LOGO list
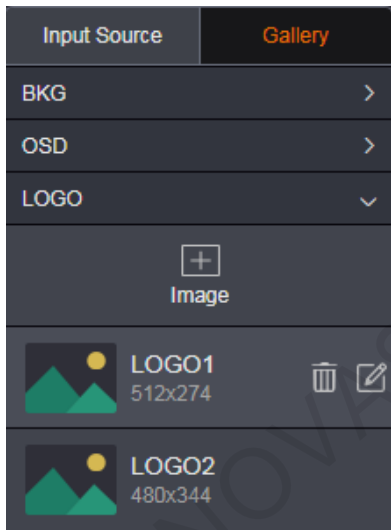
Step 2 Click **Image** to pop up a window where you can select a LOGO image.

Step 3 Select a desired local image, and then click **Open** to pop up the LOGO settings window.

Figure 7-22   LOGO settings

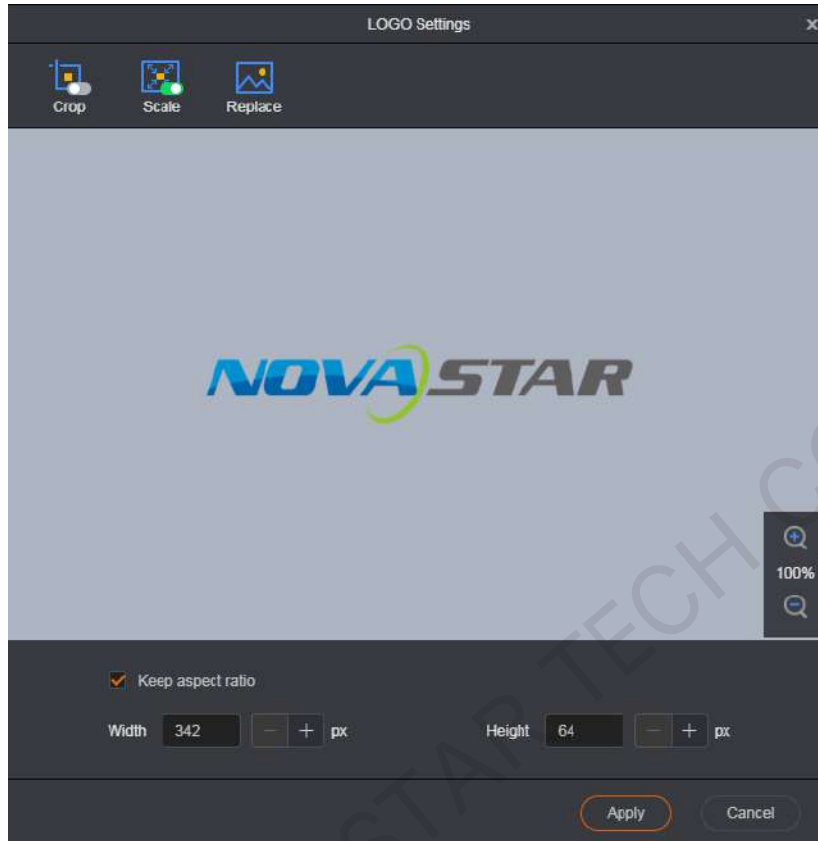● Crop: Crop the imported LOGO image and use the cropped image as the BKG.

The highlighted area is the area to be kept. Click and drag the area to change its position, and drag its edge to change its size.

After the settings, click ✕ at the bottom-right corner of the area to cancel the selection, or click ✓ to confirm the settings.

− Initial X: Set the horizontal initial coordinate of the top-left corner of the cropped area on the original image.

− Initial Y: Set the vertical initial coordinate of the top-left corner of the cropped area on the original image.

− Width: Set the width of the cropped image.

− Height: Set the height of the cropped image.

● Scale: Scale the imported image.

− Keep aspect ratio: After this item is selected, when you adjust the width or height, the system will automatically calculate the height or width based on the set aspect ratio.

− Width: The LOGO image width after scaling

− Height: The LOGO image height after scaling

● Replace: Select a new BKG image and replace the current one.

Step 4 Click **Apply** to save the edited LOGO image to LOGO list and send the LOGO image to the NovaPro UHD.
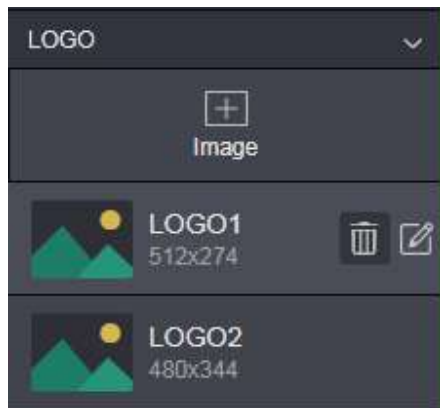
7.3.5.2 LOGO Operations

Loading LOGO

Click a LOGO in the LOGO list to load the LOGO image to the editing area. The LOGO is always located at the top. The LOGO priority cannot be adjusted.

Click ☒ at the top-right corner of the LOGO to delete it.

LOGO Operations

● BKG list operations

Hover the mouse over the LOGO list to show the LOGO operation menu.

- Deleting LOGO

  Click 🗑 next to a LOGO and select **OK** in the displayed dialog box to delete the selected LOGO.

- Editing LOGO

  Click ✎ next to a LOGO to pop up the LOGO settings window to re-edit or replace the current LOGO.

- LOGO operations in PVW area

  After a LOGO is added to the PVW area, you can lock, unlock or read back the LOGO.

  - Locking or unlocking LOGO

    Right click the LOGO and select **Lock** in the context menu to lock the LOGO. After locked, the LOGO cannot be deleted.

    After locked, right click the LOGO and select **Unlock** in the context men to unlock the LOGO. After unlocked, the LOGO can be deleted.

  - Reading back LOGO

    When you refresh the Web page or log in to the system again, the PVW area does not display the LOGO image. Right click the LOGO and select **Read Back** to display the LOGO in the PVW and PGM area.

7.3.6 Transition Settings

Figure 7-23   Transition settings
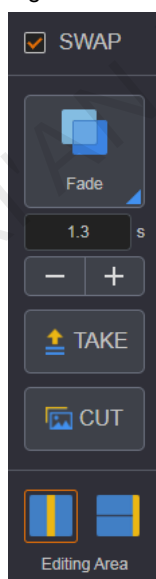
- SWAP: When selected, click **TAKE** or **CUT** to interchange the PVW and PGM display. When deselected, the PVW and PGM displays are the same.

- Cut: Set the PVW to PGM transition effect.

- : Set the transition duration. Enter a value directly in the text box or click +/- to adjust the value. The value ranges from 0.5s to 2.0s and defaults to 0.5s.

- TAKE: Send the PVW to PGM with a transition effect.

- CUT: Send the PVW to PGM without a transition effect.

- Editing Area: Set the layout for the PVW and PGM area. The supported layouts are and .

7.3.7 PGM Edit

When you need to change the output image of a certain layer and keep the others unchanged, this function is your ideal choice.

Step 1 Click **PGM Edit** in the top right of the PGM area to enable the PGM editing function.
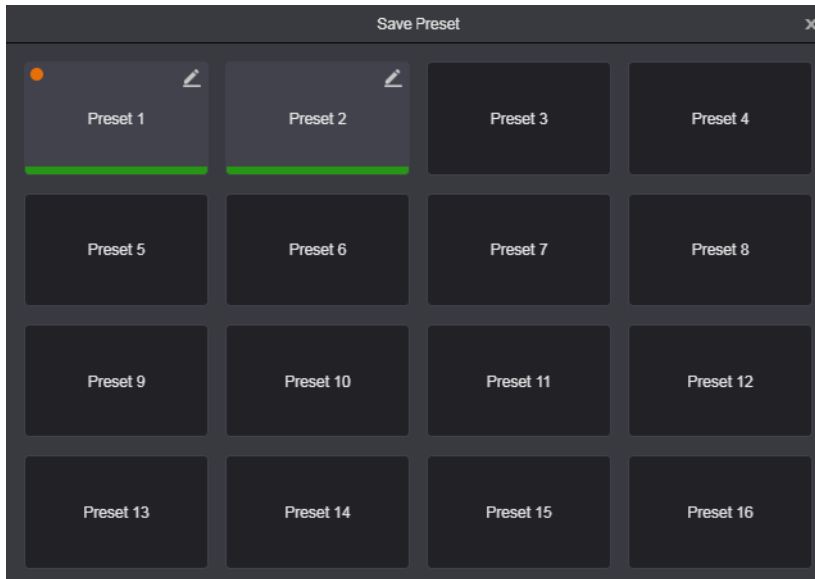
Figure 7-24   PGM edit
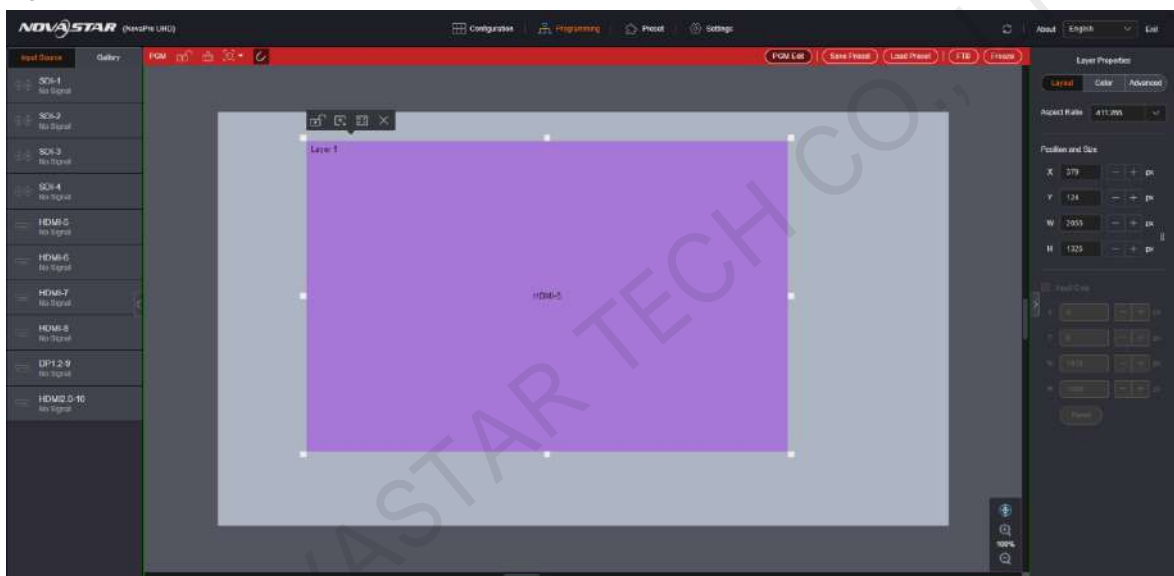
Step 2 Change the output image directly as required.

7.4 Preset

7.4.1 Saving Presets

Step 1 After you have completed the layer settings on the **Programming** page, click **Save Preset** on the upper-right of the PVW area to pop up the preset saving window.
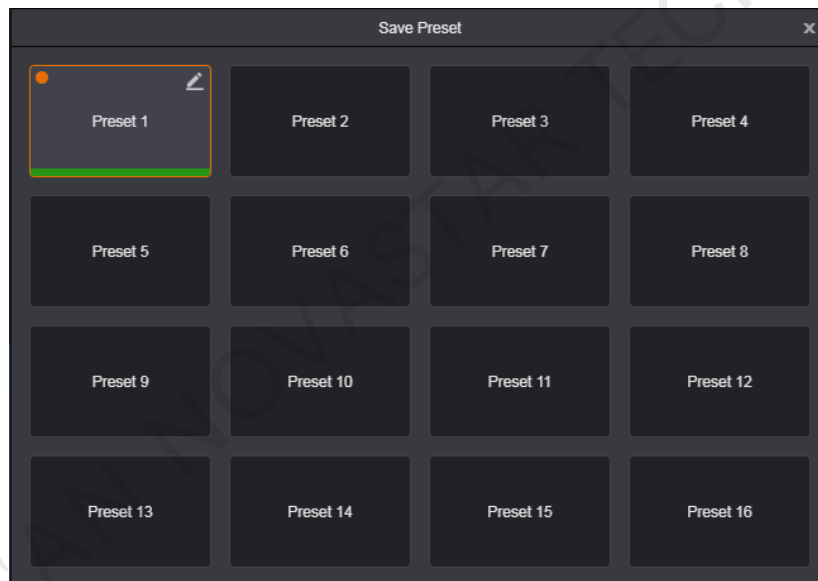
Figure 7-25   Saving presets

Step 2   Select a preset.

The system will save the current screen information to the selected preset. The selected preset is highlighted.

Figure 7-26   Saved presets

Click [icon] at the top-right corner of the saved preset, and rename the preset in the text box.

7.4.2 Loading Presets

You can load the preset by clicking the **Load Preset** button on the **Programming** page, or directly clicking a preset on the **Preset** page.

● Loading presets by clicking the **Load Preset** button

On the **Programming** page, click **Load Preset**. On the displayed preset loading dialog box, click a saved preset to load it to the screen.

● Loading presets by clicking a preset on the **Preset** page

On the **Preset** page, click a saved preset in the preset list on the left to load the selected preset to the screen.

Empty presets cannot be loaded.

7.4.3 Preset Operations

- Click **Clear All** below the preset list to clear all the saved presets, including the preset data and names.
- Click **Import** to import the presets. After the importing, all the current saved presets will be cleared.
- Clear **Export** to export the saved presets as preset files which can be imported easily in future use.
- Context menu
    - Right click a saved preset to access the context menu. Select **Copy** to copy the preset and select **Clear** to clear the preset.
    - After **Copy** is selected, right click another preset and select **Paste** to paste the preset you selected previously.

7.5 Settings

7.5.1 Output Settings
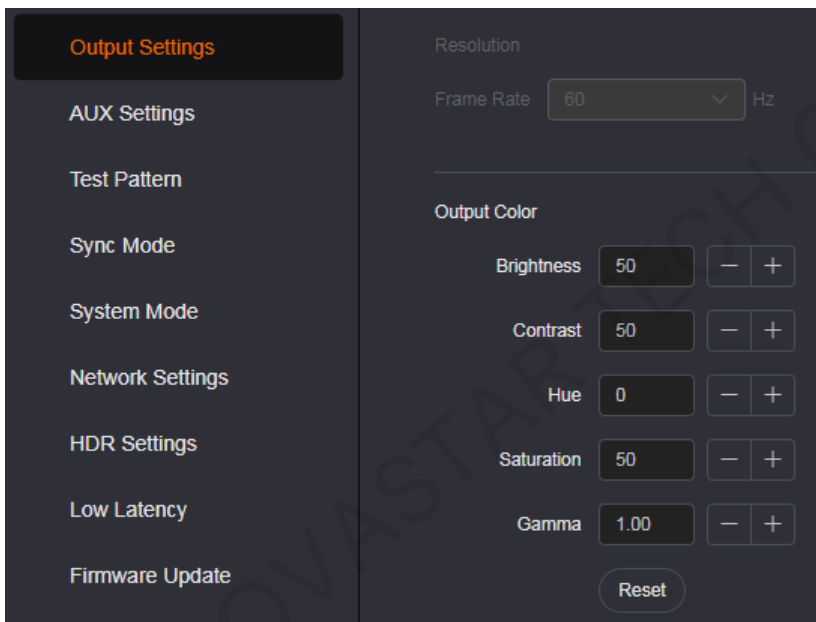
- Resolution: Select a frame rate from the drop-down list next to **Frame Rate**.
- Output Color: Set the output image quality by adjusting the values of brightness, contrast, hue and saturation.

Menu	Description
Brightness	Adjust the brightness of the layer image. *The value ranges from 0 to 100, and defaults to **50**.*
Contrast	Adjust the contrast of the layer image. The value ranges from 0 to 100, and defaults to **50**.
Hue	Adjust the hue of the layer image. The value ranges from –180 to +180, and defaults to **0**.
Saturation	Adjust the saturation of the layer image. The value ranges from 0 to 100, and defaults to **50**.
Gamma	Adjust the image distortion degree from the input to output. The greater the value is, the more distorted the image will be. The value ranges from 0.25 to 4.00.

- MVR Settings: Set the output frame rate for the MVR connector.

7.5.2 AUX Settings
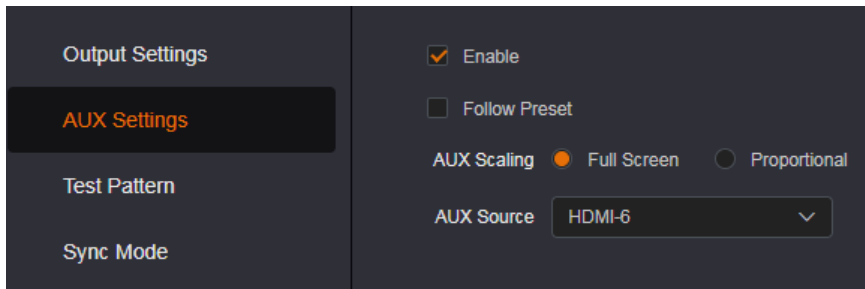
- Enable: Select **Enable** to turn on the AUX function. It is deselected by default.
- Follow Preset: Set whether the AUX follows the preset during switching.
  - Selected: If the preset has AUX data, the AUX input source will be switched during preset switching.
  - Deselected: The AUX input source will not be switched during preset switching.
- AUX Scaling: Set the AUX display mode.
  - Full Screen: Make the image display in full screen.
  - Proportional: Scale the image proportionally and then display it on the screen.
- AUX Source: Select a desired AUX source. The options include all the input sources, PVW and PGM.

7.5.3 Test Pattern

Test pattern is used to test the display effect and working status of the LED screen. Test patterns include **Pure Color**, **Gradient**, **Grid**, **Brightness**, **Spacing** and **Speed**.
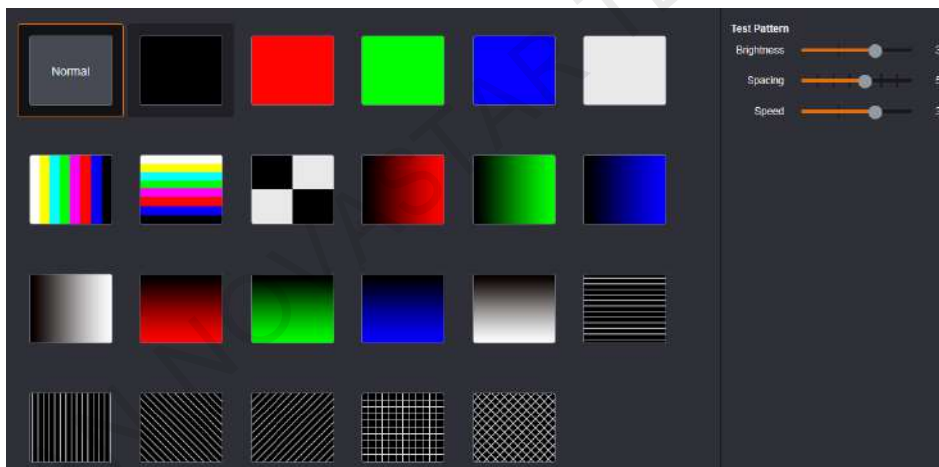
- Normal: Close the test pattern and display the current playback image normally.
- All the test patterns
- Brightness: Set the brightness of the test pattern. The value ranges from 1 to 4, and defaults to **3**.
- Spacing: When the test pattern is gradient or grid, the item is available. When the test pattern is pure color, the item is unavailable. The value ranges from 1 to 8, and defaults to **5**.
- Speed: When the test pattern is grid, the item is available and is used to set the moving speed of the grid. When the test pattern is pure color or gradient, the item is unavailable. The value ranges from 1 to 4, and defaults to **3**.

7.5.4 Synchronization Mode

Select a synchronization signal to synchronize all the linked device units and make the output images on all the devices display in sync.
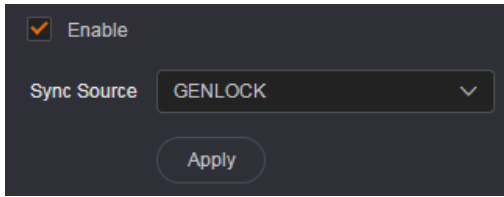
Step 1   Select **Enable** to turn on the synchronization function.

Step 2   Select a synchronization source from the drop-down list next to **Sync Source**.

The NovaPro UHD allows an external Genlock source or the connected input source to be used as the sync source. If the resolution of the sync source changes or the sync source cable is re-plugged, please re-configure the sync mode.

7.5.5   System Mode

Set the device hot backup status and OPT port working status.

7.5.5.1   Hot Backup

Set the device as the primary or backup device. When the primary device fails or any input source of the primary device is abnormal, the backup device takes over the job automatically to load the LED screen.

Table 7-3 Hot backup

Item	Description
Normal	The device is not used for any device backup or Ethernet port backup.
Primary	The device is used as the primary device in device backup mode, and is not used for Ethernet port backup.
Backup	The device is used as the backup device in device backup mode, and is not used for Ethernet port backup.

Table 7-4 Hot backup
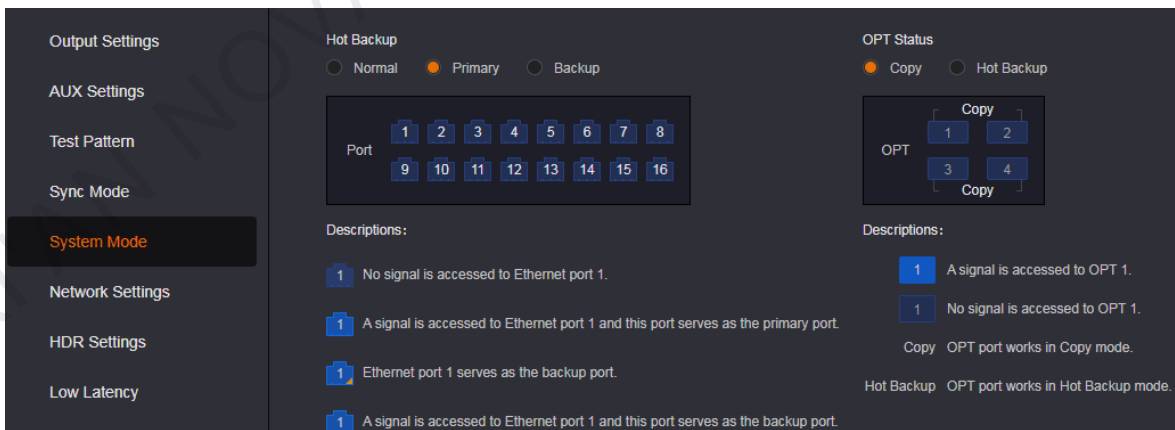
Note:

For detailed Ethernet port status descriptions, please see **Descriptions** on the **System Mode** page.

7.5.5.2   OPT Status

The NovaPro UHD supports both **Copy** and **Hot Backup** (default) modes for OPT ports. OPT 1 copies the data on Ethernet ports 1 to 8, and OPT 2 copies the data on Ethernet ports 9 to 16.

● Hot Backup: OPT 3 serves as the hot backup for OPT 1, and OPT 4 serves as the hot backup for OPT 2.

● Copy: OPT 3 serves as the copy for OPT 1, and OPT 4 serves as the copy for OPT 2.
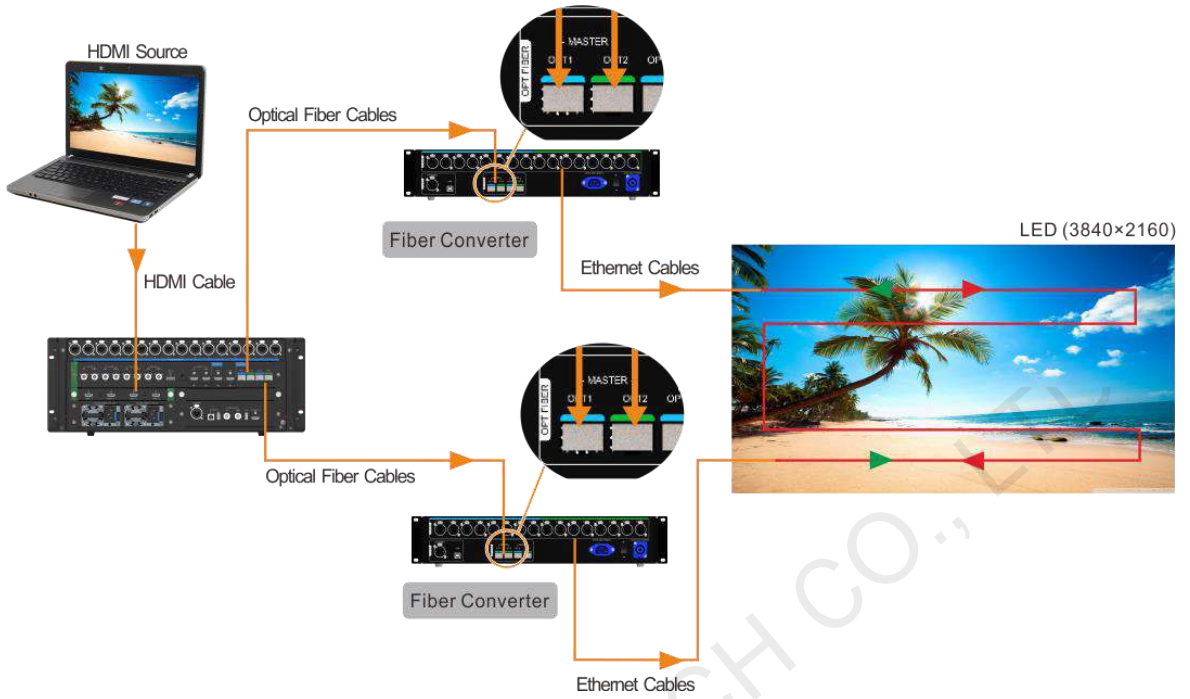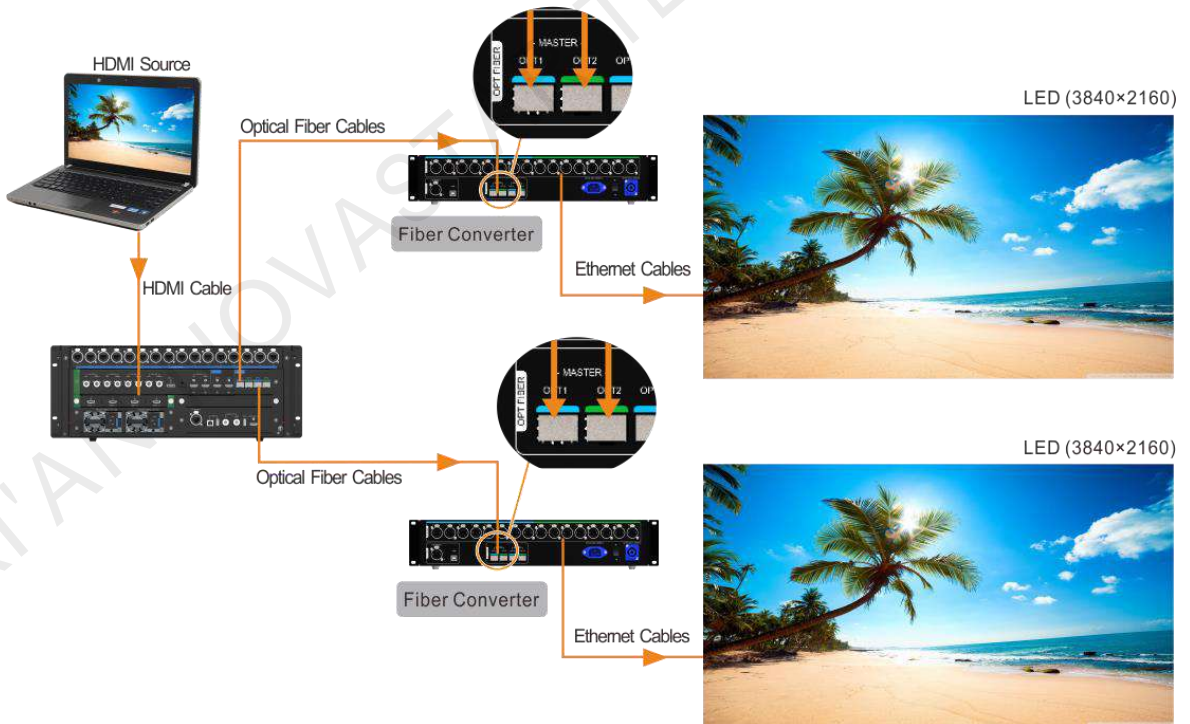
Figure 7-27   Connections for hot backup mode

Figure 7-28   Connections for copy mode

7.5.6　Network Settings

Set the device IP address and subnet mask. When the IP is changed, enter the new IP address into the address bar to log in to the Web page again.

Note:

If the device is on the public network, do not change the IP address randomly.

7.5.7　HDR Settings

HDR is the acronym for High-Dynamic Range. HDR function can greatly enhance the display image quality, allowing for a more clear and vivid image when the device is used together with the NovaStar A8s/A10s Plus receiving cards.

Figure 7-29　HDR settings

Menu	Description
Peak Screen Brightness	Adjust the screen brightness under normal operation. The value ranges from 100 to 10000, and defaults to 1000. Unit: Nit
Ambient Brightness	Display the ambient brightness. The value ranges from 0 to 200, and defaults to 30. Unit: Nit
Low Grayscale Mode	Adjust the grayscale value of the screen image. The value ranges from 0 to 50, and defaults to 15.

7.5.8　Low Latency

Low latency reduces the input source signal latency from input to output image of the NovaPro UHD. This function can realize 2-frame delay from sending card to receiving card when the device is used together with NovaStar Armor series receiving cards.

Select **Low Latency** to turn on this function.
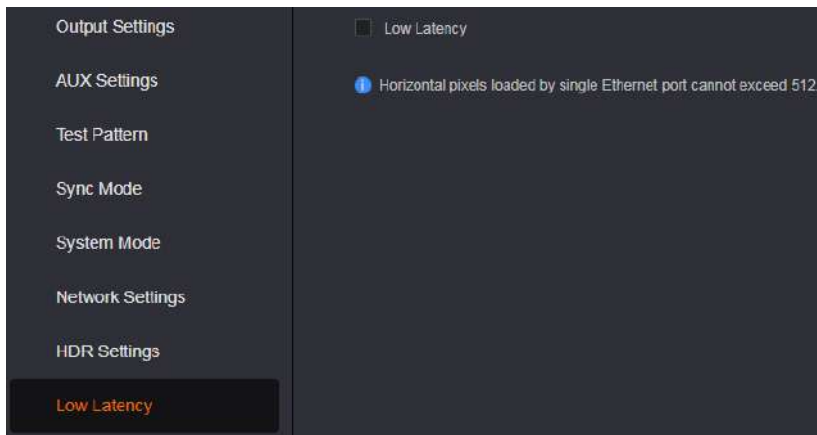
Note:

- The loading width of a single Ethernet port should be no greater than 512 pixels when low latency function is enabled.

- The supported Armor series receiving cards include the A8/A8s/A9s/A10s Plus.

7.5.9 Firmware Update

Step 1 Go to **Settings** > **Firmware Update** to enter the update page.

Step 2 Click [⋯] next to **Update File** to select the update file.

Step 3 The system will parse the update file package automatically, and display the device current versions and update package versions.

Figure 7-30 Firmware update
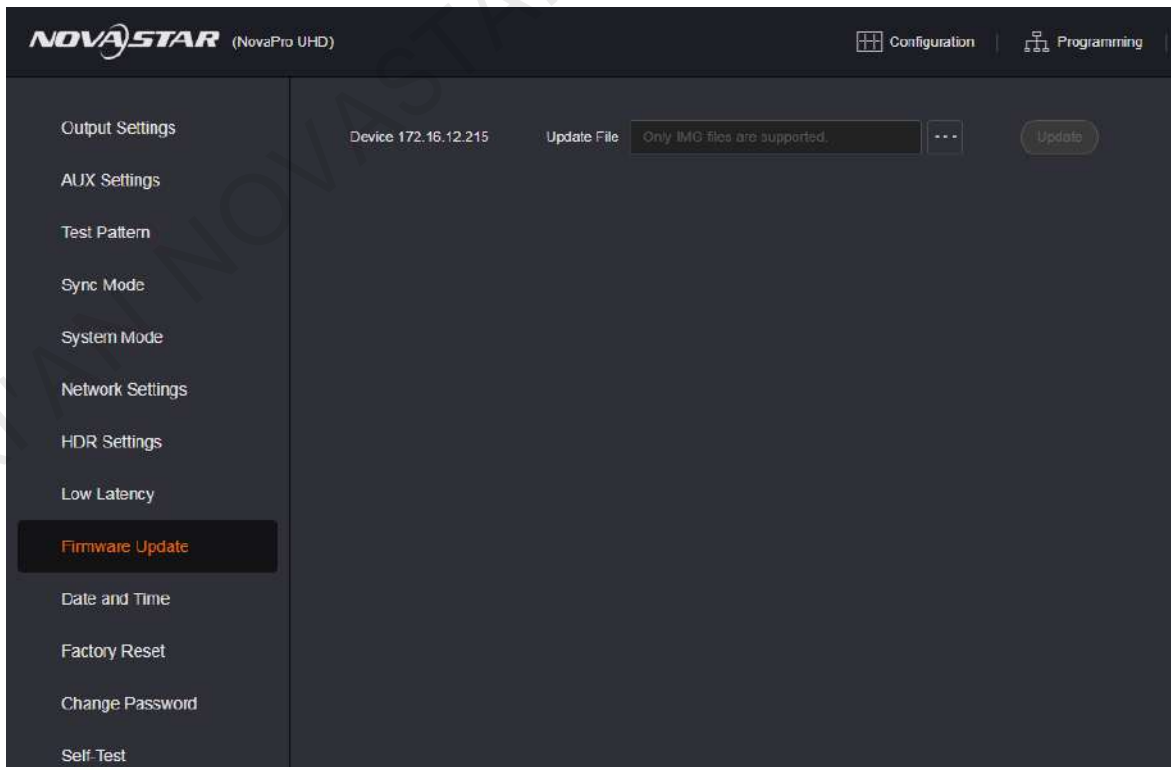
Step 4 Select the desired items.
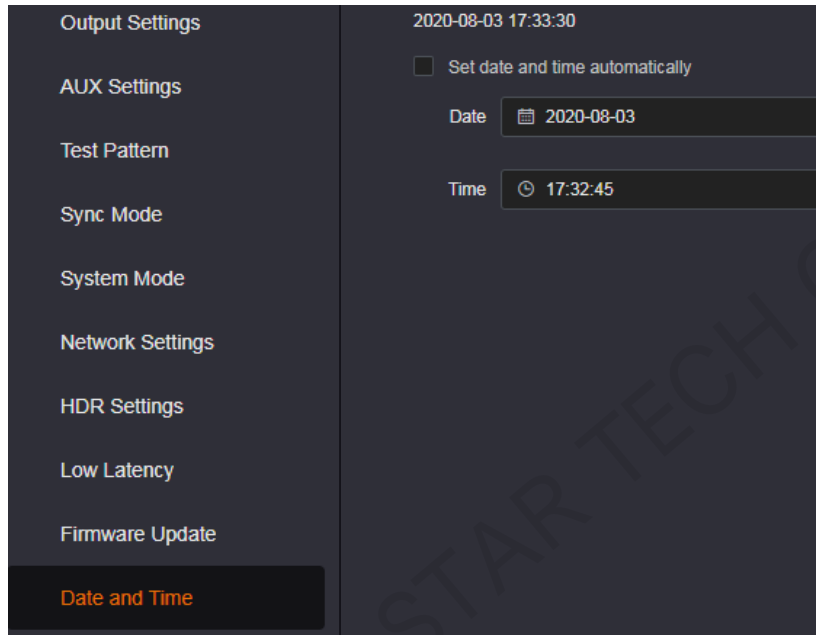
Step 5   Click **Update**.

Note:

After the firmware update, please reset the device to factory settings.

7.5.10 Date and Time

Set the device date and time.

Select **Set date and time automatically** and the device will automatically read the date and time from the connected PC.
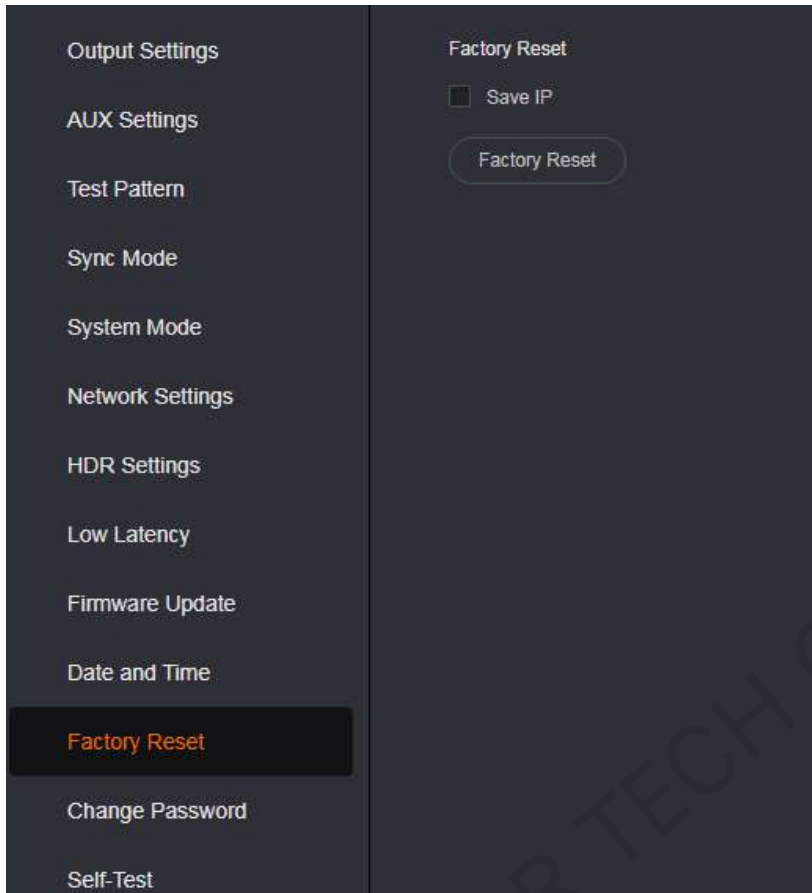
Figure 7-31   Date and time

7.5.11 Factory Reset

When you have updated the device or you want to delete some device information, reset the device to factory settings to quickly clear the unwanted files and reset the parameters to default settings.

Figure 7-32　Factory reset

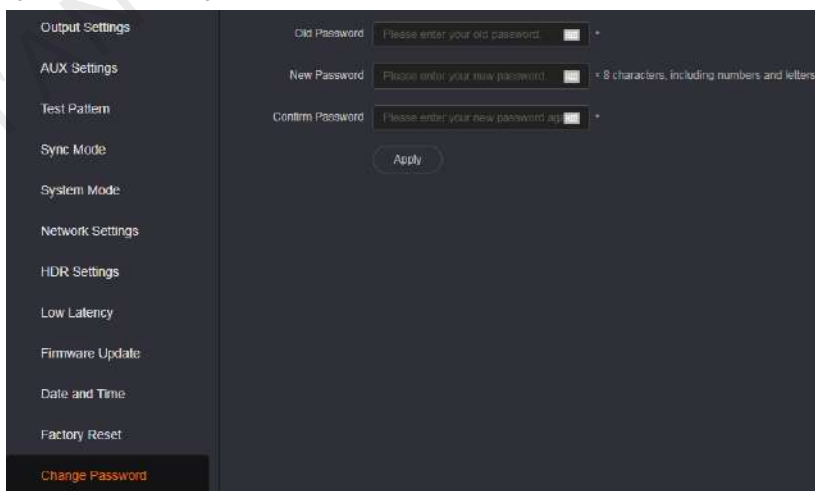Select **Save IP** to reset all the device settings to factory settings, except for the device IP address.

Note:

After the firmware update, please reset the device to factory settings.

7.5.12　Change Password

Change the login password. The default password is "88888888".

Figure 7-33　Change password

Step 2　Enter your current password in the **Old Password** area.

Step 3   Enter your new password both in the **New Password** and **Confirm Password** text boxes. The two passwords you entered must be the same.

Step 4   Click **Apply** to confirm and apply the change.

Note:

The password must contain 8 characters, including letters and numbers.

If you forget your password, use the super password "NovaStar" to log in to the Web page, and then set a new password for login. The super password cannot be deleted or changed.

7.5.13   Self-Test

When the device fails, diagnose the device for quick troubleshooting, and feedback the result to NovaStar for more help.

Figure 7-34   Self-test

8 Specifications

Overall Specifications		
Electrical Specifications	Power connector	100–240V~, 50/60Hz, 7.2A–3.5A Dual redundant power supplies
	Power consumption	180 W
Operating Environment	Operating temperature	–10°C to +60°C
	Operating humidity	0% to 80%, non-condensing
	Storage humidity	0% to 95%, non-condensing
Physical Specifications	Dimensions	482.6 mm × 183.9 mm × 497.5 mm
	Net weight	21 kg
	Gross weight	42 kg
Packing Information	Accessories	• 2x Power cords • 1x DVI cable • 1x USB cable • 1x Ethernet cable • 1x HDMI cable • 1x DP cable • 1x Mini DP to DP cable • 46x Silicone dustproof plugs • 1x USB drive (16 GB) • 1x Custom Letter • 1x Quick Start Guide • 1x Certificate of Approval • 1x Safety Manual
	Flight case	531 mm × 286 mm × 786 mm
Certifications		FCC, IC, UL/CUL, CB, CE, RoHS 10, EAC, KC, RCM, PSE
		Note: If the product does not have the relevant certifications required by the countries or regions where it is to be sold, please apply for the certifications yourself or contact NovaStar to apply for them.
Noise Level (typical at 25°C/77°F)		57 dB(A)

9 Video Source Features

Input Connector	Bit Depth		Max. Input Resolution
● HDMI 2.0 ● DP 1.2	8-bit	RGB 4:4:4	4096×2160@60Hz 8192×1080@60Hz
		YCbCr 4:4:4	
		YCbCr 4:2:2	
		YCbCr 4:2:0	Not supported
	10-bit	RGB 4:4:4	4096×2160@30Hz 8192×1080@30Hz
		YCbCr 4:4:4	
		YCbCr 4:2:2	4096×2160@60Hz 8192×1080@60Hz
		YCbCr 4:2:0	Not supported
	12-bit	RGB 4:4:4	4096×2160@30Hz 8192×1080@30Hz
		YCbCr 4:4:4	
		YCbCr 4:2:2	4096×2160@60Hz 8192×1080@60Hz
		YCbCr 4:2:0	Not supported
HDMI 1.3	8-bit	RGB 4:4:4	1920×1080@60Hz
		YCbCr 4:4:4	
		YCbCr 4:2:2	
	10-bit	RGB 4:4:4	
		YCbCr 4:4:4	
		YCbCr 4:2:2	
	12-bit	RGB 4:4:4	
		YCbCr 4:4:4	
		YCbCr 4:2:2	
12G-SDI	● Max. input resolution: 4096×2160@60Hz ● Does not support input resolution and bit depth settings. ● Supports ST-2082-1 (12G), ST-2081-1 (6G), ST-424 (3G) and ST-292 (HD).		

Statement

Thank you for choosing NovaStar's product. This document is intended to help you understand and use the product. For accuracy and reliability, NovaStar may make improvements and/or changes to this document at any time and without notice. If you experience any problems in use or have any suggestions, please contact us via the contact information given in this document. We will do our best to solve any issues, as well as evaluate and implement any suggestions.

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