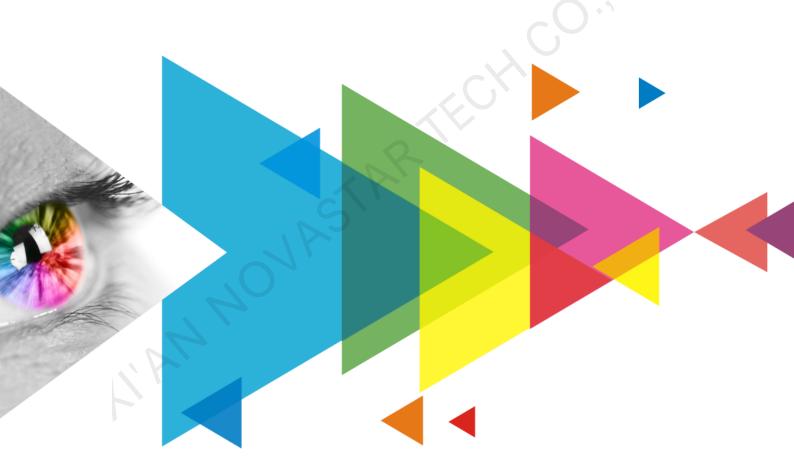


NovaLCT LED Configuration Tool for Synchronous Control System

V5.3.1



User Manual

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1 Software Introduction

The LED display control systems are categorized into synchronous control system and asynchronous control system. In synchronous control system, the images are played and controlled on the screen synchronously with the video source (such as on PC or camera). In asynchronous control system, they are played and controlled asynchronously. The program is pre-stored on the local playback device and then played according to the playback schedule.

No matter in which control system, the application scenario requires a piece of supporting software to configure the control system. Based on the needs of different users, NovaStar has designed and developed an LED screen configuration tool — NovaLCT.

As a basic screen configuration tool running on Windows, NovaLCT has the following features.

Easy to install

The latest installation package can be downloaded from NovaStar official website www.novastar.tech at any time and it is quick and easy to install.

Practical functions

A lot of commonly used functions are provided, such as screen configuration, screen monitoring, redundancy settings, brightness adjustment, multi-batch adjustment, dark or bright line adjustment, multifunction card management and other configuration functions. Thanks to these functions, the screen can present optimal display effect and is easy to to manage and maintain.

• Wide scope of applications

NovaLCT can be used to configure NovaStar synchronous control system products and multimedia players of asynchronous control system. It meets different needs of screen manufacturers, contractors, distributors, rental application clients, end users and technical support engineers.

Efficient configuration

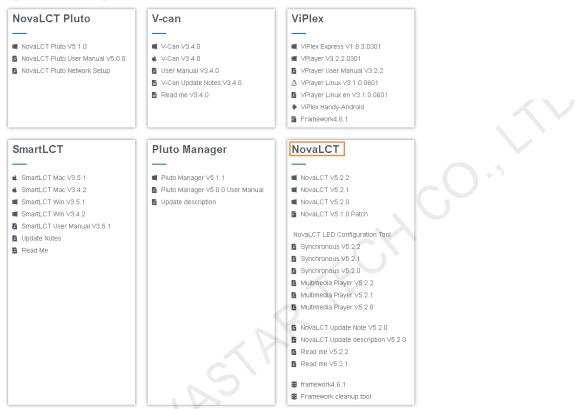
After the PC and control system product are connected, users can perform any operations with the PC. NovaLCT displays the corresponding functions and parameters according to the different hardware models and programs. During configuration, various kinds of configuration files can be used to complete operations quickly. If the configuration information is saved to the hardware, it will not be lost even after the hardware is powered off.

2 Software Installation

Obtaining Software

Visit www.novastar.tech and choose **DOWNLOADS** > **Software**. In the NovaLCT area, download the needed version of software installation package.

Figure 2-1 Obtaining software



Installing Software

Before installing NovaLCT, prepare a Windows PC and disable the antivirus software.

Unzip the installation package, run the .exe file and follow the setup wizard to complete the installation. If a firewall prompt appears, choose to allow the installation.

If the PC does not have the serial port driver program or the program version is earlier, the NovaLCT installation program will automatically install or update the program.

Verifying Installation

If the installation is successful, the shortcut k appears on the desktop, and and icons appear on the taskbar.



3 Device Connection

3.1 Connecting PC to Sending Card

Connect the PC with NovaLCT installed to the sending card with control cable (USB cable or Ethernet cable), as shown in Figure 3-1. The MCTRL4K is used as an example of sending card.

All control commands, parameters and configuration files are transmitted with the control cable.

The PC can also be connected to multiple sending cards with control cable. After selecting a target communication port in NovaLCT, you can operate the connected device.

Figure 3-1 Hardware connection example



If the receiving card supports no sending card mode, the PC with NovaLCT installed can be directly connected to the receiving card with Ethernet cable. For related settings, see 13.1 How do I set the required parameters in no sending card mode?

3.2 Connecting NovaLCT to Sending Card

If the hardware connection is normal and the sending card is operating normally, NovaLCT connects to the sending card automatically. After successful connection, the NovaLCT main window displays the sending card quantity and monitoring information about the control system, as shown in Figure 3-2.

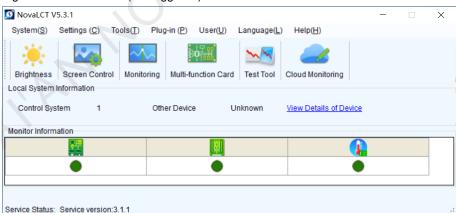


Figure 3-2 Main window (Not logged in)

Click **View Details of Device** to view the communication port, device name, device quantity and SN. If the communication port information contains IP address, NovaLCT communicates with the device via Ethernet port. If it contains "USB" characters, they communicate via USB port. "SN" is the unique identifier of the sending card. Connection related operations:

Reconnect sending card

Choose System > Reconnect.

Restart server

On the taskbar, right click was and click Restart.



Set connection parameters

On the taskbar, right click **Detect Config** and set the marked parameters in the figure below.

🖳 Detect	Config	- 0	×	
Aut	o Detect Config		-	
	🗹 Auto detect cont	roller		
Det	ect Interval Config		-	
	Detect interval: 3	D 😫	s	
Vir	tual Controller Conf	ig	-	
	🗌 Enable virtual c	ontroller		
	OK	Cancel		
			4	



4 User Login

Sending Card Connected

If the sending card is connected, users can directly use the available functions without login. To use the advanced functions, users must log in to NovaLCT.

Operations:

Choose **User > Advanced Synchronous System User Login**. Enter the password and click **Login**. The default password is "admin".

After successful login, the main window is shown as Figure 4-1.

Figure 4-1 Main window (Logged in)

0 NovaLCT V5.3.1			- 🗆 X	
System(S) Settings (C) Tools(1	r) Plug-in (P) User(U) Language	(L) Help(H)		
Quick Configuration	guration Brightness Calibration S	creen Control Monitoring N	Aulti-function Card	
-Local System Information				
Control System 1	Other Device Unknown	View Details of Device		
Monitor Information				
R.	Q			
Service Status: Service version:3.1.1			.::	

Other Operations:

- To log out, choose **User** > **Logout**.
- To change the login password, choose User > Change Password.

Sending Card Not Connected

If the sending card is not connected and users want to learn about the functions, use the demonstration mode. **Operations:**

Choose User > Demonstration Login. Enter the password "admin" and click Login.

5 Screen Configuration

Generally, the screen is first built and then configured.

If users already have an appropriate configuration file, follow the operations in 5.1 Loading Configuration File to finish screen configuration quickly. If manual screen configuration is required, follow the operations in 5.2 Configuring Screen Manually in order.

5.1 Loading Configuration File

Applications

Load a system configuration file to finish screen configuration quickly.

Applicable Products

All receiving cards and sending cards

Prerequisites

The system configuration file (.scfg) is prepared.

Related Information

None

Operating Procedure

Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click Login.

The default password is "admin".

Step 2 Click screen Configuration or choose Settings > Screen Configuration from the menu bar to open the dialog box shown in Figure 5-1.

Figure 5-1 Screen configuration

Screen Configuration		×
-Select Communication	Port	
Current Operatio	USB@Port_#0003.Hub_#0001 ~	
Configure Screen		
O Load Config		Browse
	Next	Close

Step 3 Choose a communication port.

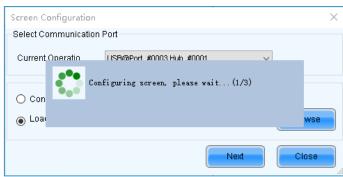
If the PC is connected to multiple sending cards with control cable, there are multiple ports in the drop-down list.

- Step 4 Select Load Configuration File.
- Step 5 Click Browse, select a configuration file, and click Open.
- Step 6 Click **Next** to start loading the configuration file.

After the file is loaded, the dialog box shown in Figure 5-2 is closed automatically.



Figure 5-2 Loading configuration file



5.2 Configuring Screen Manually

For a common screen, set the input source, light the screen and connect the screen in order to complete the screen configuration.

Note

The screen configuration page in NovaLCT varies depending on the functions supported by the sending card and receiving card.

5.2.1 Setting Input Source

Applications

Set the input source type, resolution, refresh rate and bit depth for the sending card to make the screen display the specified input source pixel to pixel.

Applicable Products

All sending cards except the all-in-one devices

Prerequisites

None

Related Information

If the resolutions of the sending card and screen are the same, the image can be displayed pixel to pixel. If the refresh rate is too low, the screen flickers. A higher refresh rate helps stabilize the display image.

Operating Procedure

Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click Login.

The default password is "admin".

Step 2 Click Screen Configuration or choose Settings > Screen Configuration from the menu bar to open the dialog box shown in Figure 5-3.



Figure 5-3 Screen configuration method

Screen Configuration		×
Select Communication	Port	
Current Operatio	USB@Port_#0003.Hub_#0001 V	
Configure Screen		
O Load Config		Browse
	Next	Close

Step 3 Choose a communication port.

If the PC is connected to multiple sending cards with control cable, there are multiple ports in the drop-down list.

- Step 4 Select Configure Screen and click Next.
- Step 5 On the Sending Card tab page, view the current display mode, as shown in Figure 5-4.

Figure 5-4 Input source information

Display Mode					Refresh
Current Display Mod	e				
Sending Card	1280 x 720(720P)	Graphics Output R	1920 x 1080	Curre I	номі
Select Input Source					
Video Input			3D Function		
Automati	HDMI	Send	Enable	Settings	
Source Configuratio	n				
Source:	HDMI ~				
Resolution:	1920 x 1080 px 🗸 🗸	Custom	1920	x 1080 👙	
Refresh Rate T	60 ~	Hz Input Source Bit	De 8 Bit		,
Kellesh Kale I	•		De		Set

- Step 6 Select Automatic Selection to allow NovaLCT to automatically select the input source according to the input signal, or select an input source from the drop-down list.
- Step 7 Click Send to send the configuration information to the hardware.
- Step 8 In the **Source Configuration** area, set the input source type and the corresponding resolution. You can select a resolution from the drop-down list or customize a resolution.
- Step 9 Set the refresh rate and bit depth of input source.

After you change the refresh rate, you are advised to resend the performance parameters on the **Receiving Card** tab page to avoid the problem that the receiving card cannot automatically fit the refresh rate.

The recommended input source bit depth is 8 bit.

- Step 10 For the MCTRL660 PRO and MCTRL R5, you can perform the following operations to set input source backup if necessary. Otherwise, skip this step.
 - 1. Click Set next to Source Backup Setting.
 - 2. Select Start source backup.
 - 3. Set the input source backup relation and click OK.



Figure 5-5 Source backup settings

•	•	•	
Source backup setting			Х
🗹 Start source backu;)		
SDI	HDMI	\sim	
HDMI	SDI	\sim	
HDBaseT	NULL	\sim	
DVI	NULL	\sim	
ОК		Cancel	

Step 11 Click Set to send the configuration information to the hardware.

Step 12 Click Refresh to confirm the result of input source setting.

Step 13 Click Save to save the configuration information to the hardware.

Note

You can click **Restore Factory Settings** on the **Sending Card** tab page to reset the sending card configuration information to factory settings.

5.2.2 Lighting a Screen

5.2.2.1 One-Click Screen Configuration

Applications

Load a receiving card configuration file from the cloud platform or local computer to quickly light a screen.

Applicable Products

All receiving cards

Prerequisites

- The input source settings are completed. For detailed operations, see 5.2.1 Setting Input Source.
- The receiving card firmware supports the module chip.
- If you want to load a receiving card configuration file from the local computer, the configuration file (.scfg/.scfgx) must be prepared.

Related Information

The configuration file cloud platform is specially used to store the receiving card configuration files. The files can be searched and download, which is convenient for users to use the configuration files.

Operating Procedure

Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click Login.

The default password is "admin"



Step 2 Click One-Click Screen Configuration to open the dialog box shown in Figure 5-6.



Figure 5-6 Choosing communication port

One-Click Screen Conf	iguration	×
- Select Communication	Port	
Current Operatio	USB@Port_#0001.Hub_#0001 ~	
	Next	Close

Step 3 Choose a communication port and click **Next** to open the dialog box shown in Figure 5-7.

Figure 5-7 One-click screen configuration

😸 One-Click Screen Configuration	-		
Enter the module number/configuration file name	Search	Load	
).1
Please search or	load		
Kr.			
S			
9,			
4			
N.Y.			
Cloud server connected successfully		.::	

If the PC is connected to multiple sending cards with control cable, there are multiple ports in the drop-down list. In the bottom-left corner of the page, the status of connection between NovaLCT and cloud platform is displayed.

Step 4 Perform any of the following operations as required to load a configuration file.

Load from cloud platform

Enter a keyword and click Search.

- When only one configuration file is found, the file will be automatically downloaded and then loaded.
- When multiple configuration files are found and if the target file you want to use is not downloaded, click
 to download it. The file will be automatically loaded after it is downloaded. If the target file is already downloaded, double click it.



🖳 One-Click Sci	reen Configuration			_		×
rcfg				Search	Load	
Fil	e Name		Remarks		Status	^
2017TD.rcfgx		2017TD			<u>+</u>	
2033.rcfgx		2033			<u> </u>	
2053.rcfgx		2053				
2055.rcfgx		2055				
Module Information	tion					
Chip	ICN2053		Scanning Type	1/27 scar	n	
Size	48W×27H		Decoding T	LS9739_	Common.	
Parameter Infor	mation					
Refresh Rate:	2760		GrayDepth:	14 Bit		
Cabinet Informa	tion					
Width (Pixel)	192		Module Colu	4	*	
Height (Pixel)	216		Module Row	8	* *	
Version Informa	tion					
Current Receivir	ng Card MRV316_V	4.5.9.0		C	Send to Re	ce

Load from local computer

Click Load and select the target configuration file.

enter the module	e number/configuration file name		earch Load
Aodule Informa	tion		
Chip	ICND2055/ICND2059	Scanning Type	1/27 scan
Bize	120W×27H	Decoding T	74HC138 Decoding
Parameter Infor	mation		
Refresh Rate:	3660	GrayDepth:	8 Bit
Cabinet Informa	tion		
Width (Pixel)	480	Module Colu	4
Height (Pixel)	270	Module Row	10
ersion Informa	tion		
Current Receivir	ng Card MRV316_V4.5.9.0		Send to Rec

If the file is a module configuration file, you can edit the numbers of module rows and columns. If it is a cabinet configuration file, you cannot edit them.

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- Step 5 Click Send to Receiving Card. In the displayed dialog box, select All Receiving Card or specify the receiving card, and click Send.
 - All Receiving Card: Send the receiving card configuration information to all the receiving cards loaded by the current sending card. If you select **Reset the Starting Coordinate of Receiving Card**, the starting coordinates of all the receiving cards will be reset to (0, 0). As a result, all the receiving cards display the top-left image of the input source.
 - Specify Receiving Card: Send the receiving card configuration information to the specified receiving card by topology or by physical address.

Figure 5-8 Figure 1-3 Sending parameters to receiving card

Send Parameters to Receiving Card	_		×
All Recei Reset the Starting Coordinate Specify Receiving Card	Send	Car	icel

- Step 6 After successful sending, click **OK** to close the prompt box. All the cabinets loaded by the receiving cards connected to the sending card are now lighted.
- Step 7 If necessary, click **Advanced** in the bottom-right corner to enter the **Screen Configuration** page and perform more settings for the screen.

On the Screen Configuration page, you can click Back to One-Click Configuration to return to the One-Click Screen Configuration page.

Figure 5-9 Advanced settings

🔡 One-Click Scr	een Configuration		
Enter the module	e number/configuration file name		earch Load
Module Informat	ion		
Chip	ICND2055/ICND2059	Scanning Type	1/27 scan
Size	120W×27H	Decoding T	74HC138 Decoding
Parameter Infor	mation		
Refresh Rate:	3660	GrayDepth:	8 Bit
Cabinet Informa	tion		
Width (Pixel)	480	Module Colu	4
Height (Pixel)	270	Module Row	10
Version Information	tion		
Current Receivin	g Card MRV316_V4.5.9.0		Send to Rece
		For adv	ranced <u>Advanced</u>
穼 Cloud server co	nnected successfully		.::



5.2.2.2 Manual Screen Configuration

5.2.2.2.1 Lighting Module

Applications

Set the receiving card parameters to light a new module.

Applicable Products

All receiving cards

Prerequisites

- The input source settings are completed. For detailed operations, see 5.2.1 Setting Input Source.
- The display settings on the PC are completed. For example, display settings on Windows 10 are shown in • Figure 5-10 and Figure 5-11. The resolution of PC graphics card must be set to be greater than or equal to the screen resolution based on the actual condition.
- The receiving card firmware supports the module chip.

Figure 5-10 PC display settings 1

Figure 5-10 PC display settings 1	
Scale and layout	
Change the size of text, apps, and other items	
100% (Recommended) V	C N
Advanced scaling settings	
Resolution	
1920 × 1080 (Recommended) V	2
Orientation	
Landscape \lor	C \
Multiple displays	
Multiple displays	
Duplicate these displays \checkmark	
	-



Figure 5-11 PC display settings 2

NVIDIA Control Panel							×
File Edit Desktop Display Help							
🔇 Back 👻 🚫							
Select a Task	2. Choose the resolution.						^
3D Settings Adjust image settings with preview	Connector: HDMI - HDTV Resolution:		Refresh rate:				
Display Change resolution Adjust desktop color settings Adjust desktop size and position Set up digital audio Adjust desktop size and position Set up multiple displays Video Adjust video color settings Adjust video image settings	Dynamic Super Resolution 1080p, 3840 × 2160, HD (4.00x) 1080j, 3840 × 2160, HD (4.00x) Ultra HD, HD, SD 1080j, 1920 × 1080 (native) 1080j, 1920 × 1080 (native) 1080j, 1920 × 1080 1080 × 1920 × 1080 1080 × 1920 × 1080 1080 × 1920 × 1920 × 1920 × 1920 × 1920 1080 × 1920 × 1920 × 1920 × 1920 × 1920 × 1920 × 1920 × 1920 × 1920 × 1920 × 1920 × 1920 × 1920 × 1920 × 1920 × 1920 × 1920 × 1920 × 1920 × 1		60Hz mic Super Resol	vution factors from Man	<u>age 3D settings</u> page,		,
	Highest (32-bit) Output color format: RGB	8 bpc	ynamic range:	KC C			~
System Information					Apply	Cance	el

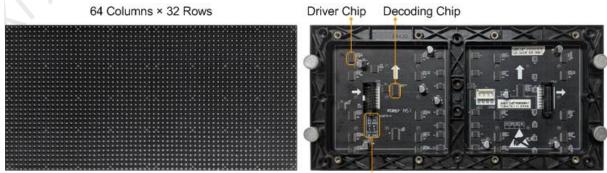
Related Information

The module specifications are provided when the module is shipped. Users can also obtain the the specifications from the driver chip, decoding chip and pin definition on the module.

For example, the following information can be obtained from the module shown in Figure 5-12.

- Driver chip: 24 SUM2016GAS2 chips
- Data type: 2 groups of parallel RGB data
- Module type: Regular module
- Pixel quantity: 64 columns × 32 rows
- Decoding chip: 2 SUM74HC138 chips

Figure 5-12 Module example



Pin Definition

Both regular and irregular modules are rectangular. If the module column quantity can be divided by 16 without remainder, the module is a regular one.

An irregular module has any of the following features:



- Some output pins of the driver chip are not used.
- The numbers of pixel rows or columns driven by each data group are different.
- The data groups do not drive the pixel rows or columns in order.

Operating Procedure

Step 1 On the Screen Configuration page, click the Receiving Card tab.

Figure 5-13 Screen configuration

Screen Configuration	-USB@Port_#	0003.Hub_#0001					-		×	
Sending Card Receiving	Card Screen	Connection								
	ommon C Iorizontal	Size: Data Groups	64W×32H 2		Scanning Type <u>Adiust RG</u>	1/16 scan			>>	
Cabinet Information								Set Rota	ition	
 Regular Width (Pixel) Height (Pixel) Module Casc 	64 ÷ 32 ÷	<=128 <=256 L v	0	Irregular Width: Loading er	?? Height: ror. Please try to a Ca) Viev	?? adjust pe v Cabinet				
Performance Setting	IS More Settir	ngs			🗌 18bit+			(5	\mathcal{O}^*
Refresh Rate Grayscale Level Shift Clock Fre Phase Position	480 Normal 4096 12.5 2	Hz MHz	Refresh Rate Grayscale Mo Duty Cycle Low Grayscal	de Refre	✓ shing Rate Fir ✓	(25~75) %				
Row Blanking Line Changing Minimum OE w			Ghost Control	I En 24		(1~24)				
Brightness Effi										
Smart Settings		Load fro	m File Receiv	ving Car		ead from Re estore Facto		nd to Re xit from I		
		~	Save	e System Co	Back Up Term	ni) Save	•	Clo	se	

Step 2 Click Smart Settings.

Step 3 Select option 1 and click Next.

- Option 1: Enter smart settings.
- Option 2: Load a module configuration file to quickly configure the module.

• Option 3: Load the module configuration file in the cabinet database to quickly configure the module.

After the configuration file is loaded, click Send to Receiving Card.

Figure 5-14 Smart settings options

5 5 I	
Smart Settings Selection	×
Note:	
(1).Option 1, click 'Next' to begin smart settings!	
(2).Option 2 or 3; load module information to software.	
Option 1: Make the module on by smart settings	
Option 2: Load module information from file	
File Path:	Browse
Option 3: Load module information from cabin	
Cabinet Databa	Browse
Selected Module:	Select Module
View Module Next	Close
	01036

Step 4 On the Smart Settings Guide 1 page, set the parameters and click Next.

hart Settings Guid	e 1			
Module Chip 1:-				_
Module Chip	Common Chi	ip ~	Select chip type	
Data Type				
Data Type:	Parallel d	lrive		~
Module Informati	on			
Module Type		Regul	O Irr	egul
Quantity of Pixel	s (virtual scr	x 64	ф у:	32
Row Decodi		74HC138 Dec	oc ~	
Working Mode of	Receiving Ca	rd		
Hub Mode:	Normal	🔘 20 Groups	🔘 24 Groups	🔘 28 Groups
Ghost Control Sig	an	High	O Low	
		0	0	
			Next	Cancel

- Module Chip: Select the type of module driver chip. You can click **Select chip type** to open the chip table and select the desired chip. If the table does not have the type of chip you want, select **Common Chip**.
- Data Type: Select the data type of the module. Parallel data indicates that the data of the RGB three colors is transmitted parallelly, but serial data indicates that the data of the RGB three colors is transmitted serially.
- Module Type: Select the module type. Module type includes regular and irregular modules.
- Number of Driver Chips for One Scan and One Color: This parameter is available when irregular module is selected. It is calculated by the following formula.

Number of driver chips for one scan and one color = Number of driver chips / Number of data groups / Number of colors

• Quantity of Pixels: Set the quantity of pixel columns and rows on the module.



Figure 5-15 Smart Settings Guide 1

- Row Decoding Type: Select the row decoding type of the module. You can select it based on the decoding chip type.
- Hub Mode: Use the default value.
- Ghost Control Signal Polarity: Use the default value.
- Step 5 On the Smart Settings Guide 2 page, select one option based on the current display on the module and click Next.

When you are viewing the display on the module, view the first module loaded by the first receiving card connected to the first Ethernet port.

Figure 5-16 Smart Settings Guide 2

Smart Settings Guide 2		×
The current display module is:		
Full Black	🔘 Display	
	Next	Cancel

Step 6 On the **Smart Settings Guide 3** page, select the module display color switching mode and check whether the current module display color is the same as the selected color.

Figure 5	-17 Smart Settings Guide 3		
Smart Set	tings Guide 3	x	
Auto	omatic switchin 🔿 Manual switchin		
Please	select the module color in each status:		
01	Red A	\sim	
۵ 2	Green	~	\sim
O 3	Blue	~	\sim
04	Red B or black	~	
	Next Cancel		

- If they are the same, click **Next** to go to Step 7.
- If they are different, select a color corresponding to the module display color from the drop-down list to make them the same.
- Step 7 On the Smart Settings Guide 4 page, set the parameters based on the number of lighted rows (or columns) on the module and click Next.

Figure 5-18 Smart Settings Guide 4	
Smart Settings Guide 4	
Lighted rows (or columns) on the module	
Row O Column	
Number of lighte 16	
Next	

Step 8 On the Smart Settings Guide 5 page, set the parameters based on the number of lighted rows (or columns) on the module and click Next.



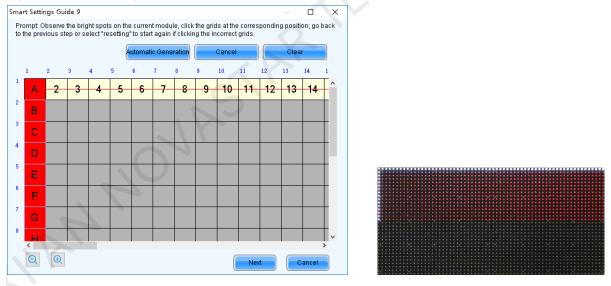
Figure 5-19 Smart Settings Guide 5	
Smart Settings Guide 5	
Lighted rows (or columns) on the module Quantity 1	
Next	

Step 9 On the **Smart Settings Guide 9** page, view the flashing pixel in the first row on the module and click the corresponding cell in the grid to draw the pixel position.

Generally, you only need to draw pixel position for the first row of pixels. If the flashing pixels are on the other row or column, click the corresponding cells in the grid.

- Automatic Generation: Complete pixel position drawing for the first row of pixels quickly.
- Cancel: Clear the last pixel position drawing.
- Clear: Clear all the pixel position drawing.
- Zoom out the grid.
- Image: Zoom in the grid.

Figure 5-20 Smart Settings Guide 9



Step 10 View the flashing pixel in the first column on the module and click the corresponding cell in the grid to draw the pixel position (You can also use the keyboard arrow key to quickly draw the position), and click **OK** after the drawing is done.

Generally, you only need to draw pixel position for the first column of pixels. If the flashing pixels are on the other row or column, click the corresponding cells in the grid.

- Step 11 Click Next and click OK.
- Step 12 (Optional) Enter a module name and save the module configuration as a file or save the module configuration to the cabinet database.

In the future, you can load the module configuration file to quickly light the modules with the same specifications.

- Browse: Select the path to save the module configuration file.
- Change Cabinet Database: Open or create a cabinet database.
- View: View the module configuration file saved in the cabinet database.



• View Module: View the detailed information about the current module.

Figure 5-21 Saving module information

Save Module Information		Х
Prompt: You can save module inform time. Module Name:	mation to file or cabinet database for direct loading next	
Option 1: Save module info File Path:	Browse	
Option 2: Save module info Cabinet Datab	Change Cabinet D View	
	View Module Save Complete	

Step 13 Click Complete.

Note

On the **Receiving Card** tab page, you can also perform the following operations.

- In the Module Information area, click to view the detailed module information. On the Details of Module page, click Save Module to save the module configuration as a file.
- Click Restore Factory settings to reset the configuration information of all or specified receiving cards to factory settings.
- Type "admin" to show the **Save to factory area** button. This button is used to save some parameters to the factory area before delivering the cabinets to users. This function is supported only by some receiving cards.

5.2.2.2.2 Setting Cabinet

Applications

Set the size of the cabinet loaded by the current receiving card and the cascading direction of the modules in the cabinet.

Applicable Products

All receiving cards

Prerequisites

- A module is lighted. For detailed operations, see 5.2.2.2.1 Lighting Module.
- If the cabinet is irregular, the cabinet database file (.mcl) or module configuration file (.module) is prepared.

Related Information

If a cabinet is rectangle and the specifications of all the modules are the same, the cabinet is a regular cabinet, otherwise it is an irregular cabinet. For an irregular cabinet, the configuration file must be used to construct the cabinet.

Operating Procedure

- Step 1 On the Screen Configuration page, click the Receiving Card tab.
- Step 2 In the Cabinet Information area, perform the corresponding operations below based on the cabinet type.



Figure 5-22 Cabinet information

– Cabinet Information	Set Rotation
Regular	O Irregular
Width (Pixel) 128	Width: ?? Height: ?? Loading error. Please try to adjust pe
Module Casc From Right to L 🗸	Construct Ca View Cabinet

Configure regular cabinet

Select Regular, set the cabinet width and height, and set the cascading direction of modules.

Configure irregular cabinet

- a. If you need to configure row extraction position, select **Big Control Mode**. If **Big Control Mode** is not displayed or you do not need to configure row extraction position, skip this step.
- b. Select Irregular, click Construct Cabinet to open the dialog box shown in Figure 5-23.
- c. If you have a cabinet configuration file (.mcl/.cabinet), click **Load** to configure the cabinet quickly. If you do not have the file, preform the subsequent operations to manually configure the cabinet.
- d. Set **Data Groups of Cabinet** according to the number of data groups actually used by the cabinet and click **Set**.
- e. Click From Cabinet Database or From File to load modules.

The loaded modules support the Ctrl+C, Ctrl+V, Ctrl+A and Delete keyboard shortcuts.

- f. Adjust the positions of modules to let them form a cabinet whose size is consistent with the actual cabinet size.
- g. Select the data group one by one and double click the corresponding modules to connect them.

After you double click the module, the module number is displayed. For example, (2, 2) indicates the module is the second module of the second data group.

Right clicking the module can cancel the connection.

h. Select **Simple Mode** or **Advanced** and configure one or more row extraction positions. If **Big Control Mode** is not selected on the **Receiving Card** tab page, skip this step.

Simple Mode: Set the row extraction position of cabinet and click **Add**. For example, if you set the parameter to **2**, the second row in the cabinet will be extracted during row extraction and the second column will be extracted during column extraction.

Advanced: Set the row extraction position of module and click **Add**. For example, if you set the three parameters to **2**, the second row in the second cascaded module connected to the second data group will be extracted during row extraction and the second column in the second cascaded module connected to the second data group will be extracted during column extraction.

- i. After the configurations are done, click **OK**. If necessary, click **Save** to save the cabinet configuration information to the cabinet database or save the information as a file.
 - Optional) Click View Cabinet to view the cabinet information.

v v	•					
Construct Irregular-Cabinet					- 🗆 X	
Data Groups of Cabinet	Zoom: 🎾 🞾	Quantity of 0	Cabinet S	0		
2 😫 Set				·		٦
Add Module					· · · · · · · · · · · · · · · · · · ·	~
From Cabinet D						
Delete Module						
Delete the Selec						
Operation of Data Groups						
Delete Clear						
1 2						
						1
Data Row Extracting Location in Cabinet						
Simple Mode O Advanced						
Number of Data Rows 1 😫						
	<				<u> </u>	~
Add Delete Clear	Module Information					
	OE		Driver Chip			
	Encodina Data		Four-color Parameters Total Quantity of Pixels			
	Scanning		Scanning Line			
Short-Key prompts		Load	Save	ок	Cancel	
						-

Figure 5-23 Constructing irregular cabinet

Step 3 If cabinet rotation is required, click Set Rotation and select the rotation angle. If it is not required, skip this step.

After cabinet rotation is set, all the input sources will be rotated to display according to the set angle.

- Step 4 After the settings are done, click **Send to Receiving Card**. In the displayed dialog box, select **All Receiving Card** or specify the receiving card, and click **Send**.
 - All Receiving Card: Send the receiving card configuration information to all the receiving cards loaded by the current sending card. If you select **Reset the Starting Coordinate of Receiving Card**, the starting coordinates of all the receiving cards will be reset to (0, 0). As a result, all the receiving cards display the top-left image of the input source.
 - Specify Receiving Card: Send the receiving card configuration information to the specified receiving card by topology or by physical address.

Figure 5-24 Sending parameters to receiving card

Send Parameters to Receiving Card			×
 All Recei Reset the Starting Coordinate Specify Receiving Card 	Send	Car	ncel

- Step 5 After successful sending, click **OK** to close the prompt box. All the cabinets loaded by the receiving cards connected to the sending card are now lighted.
- Step 6 (Optional) Click **Save to File** to save the configuration information as a receiving card configuration file (.rcfgx), or click **Receiving Card is configured with U disk file** to save the information as a USB drive file (.bin).

5.2.3 Connecting Screen

Applications

Connect the receiving cards logically. Generally, one receiving card loads one cabinet. Therefore, this function is also called connecting cabinets.

Applicable Products

• Configuration of standard screen: Applicable to all sending cards



 Configuration of complex screen: The DVI connector of the MCTRL1600 cannot be used to configure a complex screen. You must use its DP 1.2 connector. The E8000 and H9 devices cannot be used to configure a complex screen.

Prerequisites

The cabinet settings are completed. For detailed operations, see 5.2.2.2.2 Setting Cabinet.

Related Information

In NovaLCT, you can configure up to 20 screens.

To configure a complex screen efficiently, you are advised to configure a standard screen first and then configure the complex screen based on the standard screen.

Operating Procedure

- Step 1 On the Screen Configuration page, click the Screen Connection tab.
- Step 2 Set the screen quantity and click Configure.

If the multiple output ports of the sending card load the different areas of the same screen, set the screen quantity to **1**. If the multiple output ports of the sending card load different screens, set the screen quantity to the number of screens loaded.

Step 3 On the **Standard Screen** page, set the column and row quantity of receiving cards. For example, set them to 10 columns and 5 rows respectively, as shown in Figure 5-25.

Figure 5-25 Column and row quantity of receiving cards

Screen Configuration-USB@Port_#0003.Hub_#0	0001						-		×
Sending Card Receiving Card Screen Connection									
Screen1						Quantity o	1 ~	Configur	
Screen Type: Standard Screen 	○ Co	mplex Screen							
Sending Card Number	Basic Info	rmation							
1	Coordinat	e: X: O	Y: O Virtu:	al Mo 🔲 E	🎦 🗆 Ena	abl Screen A	r 128 x	128	
Ethernet Port No.	Columns	10 Ro	ws 5	ResetAll	Hided Rec	+ ~ 🛧 🗲	5		
		1	2	3	4	5	6	7 ^	•
5 6 7 8 9 10 11 12		Sending Card: Port: Receiving	Sendi F Rec						
13 14 15 16		Card: Width:0	Card: Width:0	Card: Width:0	Card: Width:0	Card: Width:0	Card: Width:0	C Wi	
Receiving Card Size Width: 64 ÷ Apply to Entir Height 32 ÷ Apply to Entir	2	Sending Card: Port: Receiving Card: Width:0	Sendi F Rec C Wi						
Set Blank Apply to the current. Quick Connection	3	Sending Card: Port: Receiving Card: Width:0	Sendi F Rec C Wi						
	4	Sending Card: Port: Receiving Card:	Sendi F Rec C						
의 미 김 미	< Zoom: <	Varid: Validth:0	Vaidth:0	Width:0	Midth-0	VAriatth: 0	SAñdth:0	5A/1 ¥	3
Detect Communic Read the Number				le Mapping Loa				end to HW	v

Step 4 Choose an output port.

- Step 5 Set the receiving card size (loading capacity) and connection. For example, Figure 5-26 illustrates setting of the receiving cards loaded by output port 1.
 - Custom connection: In the table, click or drag the mouse.
 - Quick connection: Click a connection pattern and drag the mouse to select an area in the table.



During connection, the loading capacity of all the receiving cards is the value you set by default. If necessary, you can change the width and height of the loading capacity on the left.

Right clicking a receiving card cancels the configuration of the card.

icreen Type:	O Ci Basic Info Coordina		t 0 Virtual	Mo 🗆 E	Enabl	Screen Ar	1920 x 1080				
Ethernet Port No.	Columns	; 10 Rov	/S 5	ResetAli 🗆 H	ided Red ~	· ☆ ← ੯	6	7	8	9	10
5 6 7 8 9 10 11 12 13 14 15 16 v	▶ 1	Sending Card:1 Port:1 Receiving Card:5 Widh:64	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card:1 Port:1 Rectiving Card:13 Width:64	Sending Card: Port Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port Receiving Card: Width:0 Height:0
Receiving Card Size Width: 64 Height: 32 Apply to Entir	2	Sending Card:1 Pot:1 Receiving Card:4 Widh:64	Sending Card:1 Port:1 Receiving Card:6 Width:64	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card:1 Port1 Receiving Card:12 Widh:64	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port Receiving Card: Width:0 Height:0
Set Blank Apply to the current.	3	Sending Card:1 Polt:1 Receiving Card:3 Widh:64	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card:1 Port:1 Receiving Card:7 Width:64	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card:1 Polt:1 Receiving Card:11 Widh:64	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port Receiving Card: Width:0 Height:0
골 띠 드 띠 드 미 르 미	4	Sending Card:1 Pot:1 Receiving Card:2 Widh:64	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card:1 Port:1 Recaiving Card:8 Width:64	Sending Card:1 Pot:1 Receiving Card:10 Widh:64	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port Receiving Card: Width:0 Height:0
	5	Sending Card:1 Pot:1 Rec Sing Card:1 Width:64	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card:1 Port:1 Recoving Card:9 Width:64	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port: Receiving Card: Width:0 Height:0	Sending Card: Port Receiving Card: Width:0 Height:0
	Zoom: «	1	~	107 Note: Cli	ck or drag		use button	to configur	e the scree	. Click the	right mous.

Figure	5-26	Receiving	card	connection	and	orizo
Figure	5-20	Receiving	caru	CONTRECTION	anu	SIZE

- Apply to Entire Column: Apply the loading capacity width of the selected receiving card to all the receiving cards in the same column.
- Apply to Entire Row: Apply the loading capacity height of the selected receiving card to all the receiving cards in the same row.
- Apply to the Current Port: Apply the current loading capacity width and height to all the receiving cards connected to the current output port.
- Reset All: Reset all the receiving card connections and blanks.
- Hided Mapping Line: Hide the receiving card mapping line (namely the connections).
- Mark the receiving card.
- Exeturn to the previous step of connection.
- D: Clear all the connections of receiving cards connected to the current output port.
- Zoom: Zoom in or out the receiving card interface in the middle. When the interface is large enough, cabinet related information is displayed.
- Step 6 Set the specified receiving cards blank and set the blank size, as shown in the example in Figure 5-27. If you do not need to set blank, skip this step.

Click a receiving card and select **Set Blank** to leave the position of that receiving card blank. Continue clicking or dragging the mouse on the empty cabinets to set blank on the other positions.

The receiving cards that are left blank do not load the screen to display the image, which helps to realize configuration of complex screen.

The blank size must be set based on the loading capacities of the neighbor receiving cards. For example, the display effect of both connection lines in Figure 5-28 is N shape. The two areas in orange are loaded by the neighbor receiving cards. Therefore, their blank size is set to 0.



Figure 5-27 Setting receiving card blank

Card Receiving Card Screen Connection											
ant										Quantity o 1	~ Config
creen Type:	O C0	omplex Screen									
Sending Card Number	Basic Info	rmation									
1	Coordina	ite: X: 0	t 0 Virtual	Mo 🗆 E	📘 🗌 Enabl	Screen Ar	1920 x 1080				
Ethernet Port No.	Columns	: 10 Rov	/s 5	ResetAli 🗌 H	ded Red 🗸	· ☆ 🗲 t	0				
1 2 3 4 ^		1	2	3	4	5	6	7	8	9	10
5 6 7 8		Sending Card:1 Port:1				Sending Card:1 Port:1	Sending Card: Port:				
9 10 11 12	▶ 1	Receiving Card S				Rectiving Card:13	Receiving Card: Width:0				
13 14 15 16 v		Widh:64				Widin:64	Height0	Height0	Height0	Height:0	Height:0
Receiving Card Size		Sending Card:1 Polt:1	Sending Card:1 Port:1			Sending Card:1 Pot:1	Sending Card: Port:	Sending Card: Port:	Sending Card: Port:	Sending Card: Port:	Sending Card: Port
Width: 64 🚖 Apply to Entir	2	Receiving Card:4	Receiving Card.6			Receiving Carl:12	Receiving Card: Width:0				
Height: 32 😫 Apply to Entir		Width:64	Width:64			Width:64	Height:0	Height 0	Height0	Height:0	Height:0
Set Blank Apply to the current.		Sending Card:1 Port:1		Sending Card:1 Port:1		Sending Card:1 Port:1	Sending Card: Port:				
Quick Connection	3	Receiving Card:3		Receiving Card:X		Receiving Card:11	Receiving Card: Width:0				
		Width:64		Width:64		Width:64	Height:0	Height0	Height0	Height:0	Height:0
الحاف النما المغا المنا		Sending Card:1 Pot:1			Sending Card:1 Port:1	Sending Card:1 Po <mark>t</mark> :1	Sending Card: Port	Sending Card: Port:	Sending Card: Port:	Sending Card: Port:	Sending Card: Port:
의 미 크 미	4	Receiving Card:2			Receiving Card:8	Receiving Cart:10	Receiving Card: Width:0				
فكف لمصف العكت العصم		Width:64			Width:64	Width:64	Height:0	Height:0	Height:0	Height:0	Height:0
		Sending Card:1 Pot:1				Sending Card:1 Port:1	Sending Card: Port:				
	5	Rec <mark>S</mark> ring Card:1				Recoiving Card:9	Receiving Card: Width:0				
		Width:64				Width:64	Height0	Height0	Height0	Height:0	Height:0
	Zoom: <		*	1.07 Note: Cli	ck or drag	the left m	ouse button	to configur	e the screer	n. Click the	right mous
t Communic. Read the Number							E	Manning Lands		Ella Daortera	n LBW
t Communic Read the Number							Enable	Mapping Load fr	om File Save ti	File Read from	n HW Send to HV

Step 7 Repeat Step 4 to Step 6 to set the receiving cards loaded by the other output ports.

For example in Figure 5-28, the receiving cards connected by the green line are loaded by output port 1 and the receiving cards connected by the yellow line are loaded by output port 2.

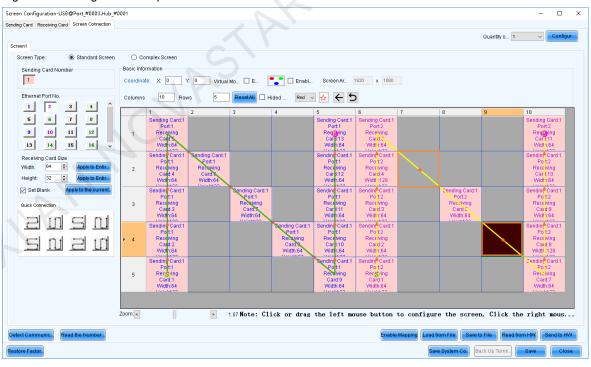


Figure 5-28 Configuration completed

Note

To configure a complex screen efficiently, you are advised to configure a standard screen first and then configure the complex screen based on the standard screen by following the operations below.

After the standard screen is configured, select **Complex Screen**. The **Complex Screen** page shows the connection diagram of the standard screen. The connection diagram in Figure 5-28 is shown as the diagram in Figure 5-29.

Double click the parameter values in the table on the right and adjust them. Click the function buttons below the star.tech 24

table to add, edit and delete the receiving cards to let the configuration meet the actual screen configuration requirements.

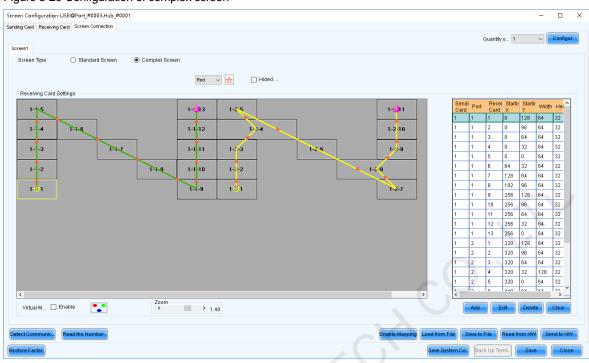


Figure 5-29 Configuration of complex screen

Step 8 Click **Send to HW** to send the configuration information to the hardware. If necessary, click **Save to File** to save the configuration information as a file.

Empty cabinets cannot exist before saving configuration. You can set the empty cabinets blank.

Step 9 After the settings are done, click **Save** to save the configuration information to the hardware.

Related Operations

- Detect Communication Status: Detect the status of connection between the receiving card and Ethernet port.
- Read the Number of Receiving Cards: Read the number of receiving cards connected to the current Ethernet port.
- Enable Mapping: Enable the Mapping function. The Mapping function is used to display the cabinet No. and the Ethernet port the cabinet is connected to on the cabinet. In this way, you can obtain the connection information.
- Read from HW: Read the current configuration information in the hardware.
- Coordinate: Set the start position of the display image on screen.
- Virtual Mode: Set the layout of LEDs.
- Enable Sync: Used for the mosaic function of the all-in-one device

5.3 Setting Redundancy

Applications

Set device redundancy and Ethernet port redundancy to ensure high reliability of the control system in applications like stage and conference center.

Applicable Products

- Redundancy: Applicable to all sending cards
- Hot backup verification: Applicable to the MCTRL4K, MCTRL R5 and KT8 sending cards



Prerequisites

Redundancy related hardware connection is done. The devices are cascaded before you set device redundancy and Ethernet port redundancy between devices.

Related Information

Use the hot backup verification function to directly verify effectiveness of backup Ethernet ports without disconnecting and reconnecting Ethernet cables.

Operating Procedure

Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click OK.

The default password is "admin".



Step 2 Click screen configuration or choose Settings > Screen Configuration from the menu bar to open the dialog box shown in Figure 5-30.

Figure 5-30 Screen configuration method

Screen Configuration		×
-Select Communication	Port	
Current Operatio	USB@Port_#0003.Hub_#0001 ~	
Configure Screen		
O Load Config		Browse
	Next	Close

- Step 3 Choose a communication port.
- Step 4 Select Configure Screen and click Next.
- Step 5 On the Sending Card tab page, perform any of the following operations as required.

Configure device redundancy

Select Set as Primary or Set as Backup to set the current device as the primary or backup device.

Note (

To set the backup device as the primary device, deselect **Set as Backup** first, send the settings to the hardware and then select **Set as Primary**.

The sending card that is used in the completed screen configuration cannot be set as backup device. To set it as backup device, you must delete the screen configuration information first.

Configure Ethernet port redundancy

- a. Click Add to open the Redundancy Settings dialog box, as shown in Figure 5-31.
- b. Enter the serial numbers of the sending cards and output ports, and click Add.

For Ethernet port redundancy within a sending card, enter the same value for serial numbers of the primary and backup sending card. For Ethernet port redundancy between sending cards, enter the actual serial numbers of the primary and backup sending cards after they are cascaded.

c. After the configurations are done, click Close.

Figure 5-31 Redundancy settings

F	Redundancy Settings		>	×
	Serial Number of Primar Serial Number of Primar	1 -	Serial Number of Backu 1	
-	Add		Close	

Step 6 (Optional) After Ethernet port redundancy is configured, perform the following operations to verify hot backup.

- 1. Click Verify to open the dialog box shown in Figure 5-32.
- 2. Select the sending card and click **Enable Hot Backup Verification**. If the display is normal, the backup Ethernet port is effective, otherwise it is not.
- 3. After verification, click **OK**.
- 4. Click **Disable Hot Backup Verification** and click **OK**.
- 5. Close the Hot Backup Verification dialog box.

Figure 5-32 Hot backup verification

9	
🖳 Hot Backup Verification	\times
Select sending cards for hot backup verification	
Sending	
After hot backup verification is enabled, if the display is correct, the hot backup takes effect. If the display is wrong, please chec	
Enable Hot Backup Cancel]

Step 7 Click **Send** to send the configuration information to the hardware, or click **Save** to save the information to the hardware.

5.4 Enabling 3D

Applications

Enable the 3D function and set the related parameters to let users wearing 3D glasses enjoy stereoscopic images.

Applicable Products

The MCTRL4K, MCTRL1600 and KT8 sending cards

Prerequisites

The 3D and low latency functions cannot be enabled at the same time. The low latency function must be disabled before enabling 3D function.

The hardware connection is done and the 3D glasses are prepared.



Related Information

After the 3D function is enabled, the loading capacity of the sending card is reduced by half.

Operating Procedure

Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click OK. The default password is "admin".



Step 2 Click screen Configuration or choose Settings > Screen Configuration from the menu bar to open the dialog box shown in Figure 5-33.

Figure 5-33 Screen configuration method

8	•	
Screen Configuration		×
-Select Communication	Port	
Current Operatio	USB@Port_#0003.Hub_#0001 ~	
 Configure Screen Load Config 		Browse
	Next	Close

- Step 3 Choose a communication port.
- Step 4 Select Configure Screen and click Next.
- Step 5 On the Sending Card tab page, select Enable in the 3D Function area.

Figure 5-34 Enabling 3D

- Select Input Source		C		
Video Input			3D Function	
🔲 Automati	HDMI	Send	🗹 Enable	Settings

Step 6 Click Settings next to Enable to open the dialog box shown in Figure 5-35.

Figure 5-35 Setting 3	3D parameters
-----------------------	---------------

Figure 5-35 Setting 3D	parameters			
Set 3D Parameters		_		×
Video Source Format				
🔘 Side-by-side	◉ Top-and-bottom	🔵 Frame s	equenti al	1
Eye Priority				
Right eye	🔵 Left eye			
Mode Selection				
DVI				
DVI1:	DVI2: R			
3D signal emitter				
🗌 Enable third-party	'emitter			
Signal Delay Time				
7 🔶 ms 0	🚔 us (Range: 0-20 m	ms) Restore D	efa	
flease set an appropr	riate delay time to mak	e left and rig	ht eye	
G				
	Save Load :	from File	Save to F	lile

Step 7 Click Load from File to quickly configure the related parameters, or configure them manually.

- Video Source Format: Set the format of the video source to side-by-side, top-and-bottom or frame sequential according to the format of the used video source.
- Eye Priority: Set which image is sent first, the left eye image or the right eye image. Wear the 3D glasses and watch the display. If the display is abnormal, set the parameter value to the other one. If the display is normal, the setting is done.
- Mode Selection: Select the same or different signal sources for the left and right eye images. If there is only one input source, this parameter is not displayed.
- Right Eye Start: Set the start position of the right eye image. When the video source format is side-by-side or top-and-bottom and the left and right eye images are provided, this parameter can be set.
- 3D signal emitter: If you use a third-party 3D emitter, select Enable third-party emitter. If you use the EMT200 emitter of NovaStar, do not select it.
- Signal Delay Time: Set the delay time of sending the left and right eye images from 3D signal emitter to the 3D glasses. This setting ensures that the switching between left and right eye images of the 3D glasses is in sync with the switching between the left and right images on the display. This parameter is applicable to both the NovaStar and third-party emitters.
- Step 8 After the configurations are done, click **Save** to save the configuration information to the hardware.

The 3D parameters take effect on the hardware immediately after they are configured. If they are saved to the hardware, they will not be lost even after the 3D emitter is powered off.

Step 9 (Optional) Click Save to File to save the configuration information as a file on the local computer.



5.5 Setting Working Mode

Applications

Set the working mode to let the device switch to the sending card mode (also known as video controller mode) or the fiber converter mode.

Applicable Products

The MCTRL660 PRO, MCTRL1600, H9, NovaPro UHD Jr, K16, and MCTRL R5 sending cards

Prerequisites

None

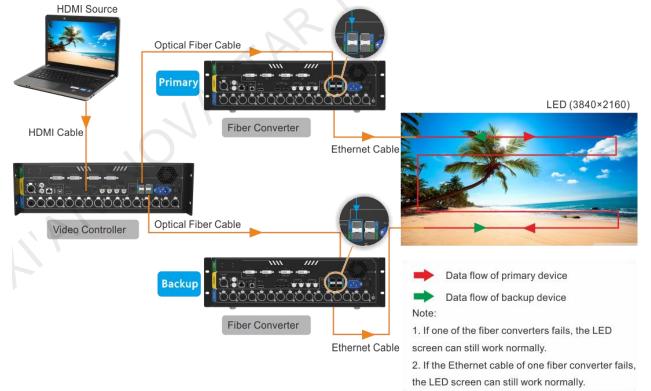
Related Information

For the MCTRL1600, H9, NovaPro UHD Jr and K16, after their working mode is set to sending card mode, you can further set the working mode of their optical ports. The working modes of optical port include hot backup mode and copy mode.

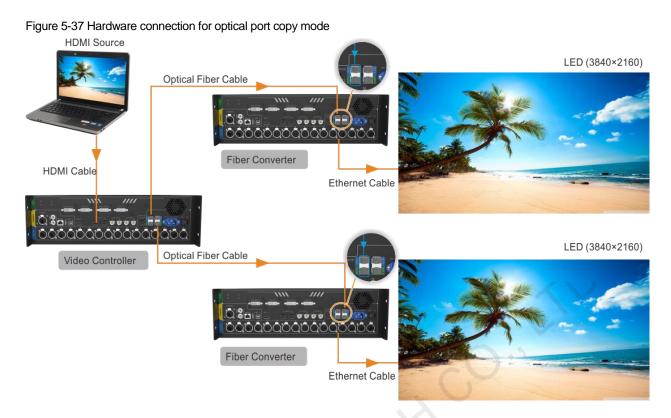
Figure 5-36 and Figure 5-37 are illustrations of the two optical port working modes, using the NovaPro UHD Jr as an example.

- Hot backup mode: The sending card sends the two duplicate optical signals to the same display through the primary and backup fiber converters to form a loop backup.
- Copy mode: The sending card sends the two duplicate optical signals to two displays through two fiber converters.

Figure 5-36 Hardware connection for optical port hot backup mode







Operating Procedure

- Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click OK. The default password is "admin".
- Step 2 Click Screen Configuration or choose Settings > Screen Configuration from the menu bar to open the dialog box shown in Figure 5-38.

Figure 5-38 Screen configuration method

iguie e ce cerceri cenigaratien nietre		
Screen Configuration		×
Select Communication Port		
Current Operatio USB@Port_#0003 Hub_#0001	- V	
Configure Screen		
O Load Config		Browse
	Next	Close

- Step 3 Choose a communication port.
- Step 4 Select Configure Screen and click Next.
- Step 5 On the **Sending Card** tab page, click **Set Working Mode**.

Figure 5-39 Working mode

Verify Hot Backup V	Working Mode Set Working	
------------------------	-----------------------------	--

Step 6 Select the sending card and set the working mode to sending card mode or fiber converter mode.



Figure 5-40 Setting	working mode
Set Working Mode	:
Select Sen	Workina Mode
Sending Card1	● Sendinα Card ○ Fiber Converter
	Working Mode of Optical Port
	OK Cancel

Step 7 For the MCTRL1600, H9, NovaPro UHD Jr and K16, after their working mode is set to sending card mode, if necessary, set the working mode of their optical ports.

Step 8 Click OK.

5.6 Setting Performance Parameters

Applications

Set the performance parameters of the cabinet to let the screen present better display effect.

Applicable Products

All receiving cards

Prerequisites

None

Related Information

None

Operating Procedure

Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click OK.

The default password is "admin".

Step 2

p 2 Click screen Configuration or choose Settings > Screen Configuration from the menu bar to open the dialog box shown in Figure 5-41.

Figure 5-41 Screen configuration method

Screen Configuration		×
-Select Communication	Port	
Current Operatio	USB@Port_#0003.Hub_#0001 ~	
Configure Screen		Browse
	Next	Close



- Step 4 Select Configure Screen and click Next.
- Step 5 Click the Receiving Card tab and click Read from Receiving Card to obtain the latest configuration information.
- Step 6 If you have a receiving card configuration file (.rcfgx/.rcfg), click **Load from File** to complete the configuration quickly. If do not have the file, preform the subsequent operations to manually configure the performance.
- Step 7 In the **Performance Settings** area, set the performance parameters.

rformance Setting Data Group E	s More Settir	ngs		🗌 18bit+	
Refresh Rate	480	↓ Hz	Refresh Rate Ti	4 ~	
Grayscale Level	Normal 4096	\sim	Grayscale Mode	Refreshing Rate Fir $ \smallsetminus $	
Shift Clock Fre	12.5	↓ MHz	Duty Cycle	50 ~	(25~75) %
Phase Position	2	\sim	Low Grayscale C	0	
Row Blanking	25	≑ (=2.00us)	Ghost Control En	24	(1~24)
Line Changing	3	(0~23)		·	
Minimum OE w	80 ns				
Brightness Effi	68.24%				

The performance parameters displayed in the area varies depending on the receiving card. The main parameters include the followings.

- Refresh Rate: Indicates the rate of updating the image on the display. Increasing refresh rate reduces image flickering, allowing for a more stable image.
- Grayscale Level: Indicates the shading of display. The higher the grayscale level, the more brightness levels the display will have. For example, if the grayscale level is 16bit, the display can express 65,536 levels of brightness.
- Grayscale Mode: Indicates the grayscale display mode. It includes brightness first, refreshing rate first, grayscale first and performance balancing.
- DCLK Frequency: Indicates the frequency of shift clock.
- DCLK Duty Cycle: Indicates the duty cycle of shift clock. Set it to 50% in general.
- DCLK Phase: Indicates the phase of shift clock. When there are mismatching or flashing pixels, adjust this
 parameter to fix the problem.
- Refresh Rate Times: Indicates the times of refresh rate.
- Low Grayscale Compensation: Indicates the compensation for the grayscale in low grayscale conditions, allowing for more precise grayscale.
- Row Blanking Time: Used to adjust the ghost problem of the scanning type display. If the ghost problem is serious, increase the parameter value.
- Line Changing Time: Works with row blanking time to adjust the ghost of the scanning type display.
- Ghost Control Ending Time: Works with row blanking time and line changing time to adjust the ghost of the scanning type display.
- Line break trimming: Works with row blanking time to adjust the ghost of the scanning type display.
- GCLK Frequency: Indicates the frequency of grayscale clock.
- GCLK Duty Cycle: Indicates the duty cycle of grayscale clock.
- GCLK Phase: Indicates the phase of grayscale clock.
- Blanking Time Height: Used to eliminate the lower ghost
- Minimum OE Width: It is calculated from other performance parameters and can be viewed only.
- Brightness Efficiency: It is calculated from other performance parameters and can be viewed only.

Step 8 After the settings are done, click Send to Receiving Card to send the performance parameters to the hardware.

Step 9 After the display effect meets the expectation, click **Save** to save the performance parameters to the hardware.

Data Group Exchange

This function is used to exchange every two data groups to adjust the display image. It can be performed only after the smart settings are done and supports regular cabinets only. For example, after you exchange the data groups A and B, data group A outputs the image of data group B, and data group B outputs the image of data group A.



Click **Data Group Exchange**, select all the receiving cards or specify one receiving card and click **OK** to open the **Data set exchange** dialog box. If the module height is less than 8 or the width is less than 20, the data group exchange is in group mode, otherwise it is in intuition mode.

The red table on the desktop indicates the original data groups. Each row is a data group. The first row is the first data group.

Intuition Mode

Select **Enable data exchange** and view the data group No. displayed on the screen. In the dialog box, double click the rows with the same No. in the second column and change the numbers.

Example:

The receiving card has two data groups in parallel output. The screen displays **5** and **6**, indicating that it outputs the images of data group 5 and data group 6.

In the Data set exchange dialog box, change 5 to 1, 6 to 2, 1 to 5, and 2 to 6, as shown in the figure below.

D	ata se	t exchange(intuition mode) X	
[A	
	1	5	
	▶ 2	6	\sim
	3	3	
	4	4	
	5	1	
	6	2	
	7	7	
	8	8	
l	ndicati	on: Fill in the lists of data set exchange according to the figures displayed in large screen	
6	🖌 En	able dat Reset data	

Click **Send**. The screen displays **1** and **2**, indicating that it outputs the images of data group 1 and data group 2 after data group exchange.

Group Mode

Select **Enable data exchange** and check whether the screen has a white area. If it has no white area, click **No flashing area**. The white row in the red table moves to the next data group. If it has a white area, click the the data group you want to exchange in the **Data set exchange** dialog box.



Example:

The receiving card has two data groups in parallel output. Click **No flashing area** multiple times and watch the screen. When the white row in the red table moves to the fifth data group, the screen has a white area, indicating that the screen outputs the image of data group 5.

In the **Data set exchange** dialog box, click the first data group. This exchanges data group 5 and data group 1. The white row automatically moves to the sixth data group. Then, click the second data group in the **Data set exchange** dialog box. This exchanges data group 6 and data group 2, as shown in the figure below.



Data set	t exchange(group mode)	×
Serial	A	
1	5	
▶ 2	6	
3		
4		
5		
6		
7		
8		
lu alla adia a	an Observation and the outline discussion in the large	
muication	n: Observe the position of the white display area in the large s	creen, men click me correspon
0	nt chos	shing Reset data
🗹 Ena	able dat Send	Close

After the settings are done, click **Send** to send the configuration information to receiving cards.

More Settings

Click More Settings to perform the following functions and set the extended attributes for the used chip.

Symmetrical/Data Group Extension

Set the output mode of data group, data group extension, hub mode and graphics output direction.

Symmetrical/Data Group Extension	×
Output Mode Symmetrical Outputs Triple Strip Outputs Quadruple Strip Outputs	Ś
Data Group Extension 20 Data Groups 24 Data Groups 28 Data Groups 32 Data Groups Serial 128 Data Groups	
Ghost Control Signal	
Signal Switch: 💿 Open 🛛 🔿 Clo	se
Signal Polarity: 💿 High 🛛 Low	/
Hub Mode Normal O 20 Group	s
O 24 Groups O 28 Group	5
Graphics Output	
Output by Scanni	he dir
ОК Са	ncel

- Output Mode: If the screen is very wide and the receiving card cannot load the entire width, set the output
 mode to symmetrical outputs, triple strip outputs or quadruple strip outputs.
- Data Group Extension: If the receiving card supports data group extension, select the corresponding
 option according to the actual condition.
- Ghost Control Signal: Use the default value.
- Hub Mode: Select a mode based on the receiving card specifications.
- Graphics Output: Use the default value.



Monitoring Card Data Line Adjustment

Adjust the data lines used by red, green, blue and virtual red LEDs during LED error detection.

Select **Enable Adjustment of Monitoring Data Line** and select **Red**, **Green**, **Blue** or **Virtual Red** from the drop-down list. After the settings are done, click OK.

Transfer Data Line Signal Data Line 1 Red ✓ Data Line 2 Green ✓ Data Line 3 Blue ✓
Data Line2 Green V
Data Line 3 Blue 🗸
Data Line 4 Virtual Red 🗸

Additional Function

Enable or disable some additional functions of receiving card.

Additional Function Isolated Pixel Afterglow Eliminate Indicator Light of Rec Close Shorten the synchroni Open Brightness becomes Enable EMC Function: Enable Linear Enable Calibrati Enable R: Image: Comparison of the synchroni in the s		
Indicator Light of Rec Close Shorten the synchroni Open Brightness becomes Enable EMC Function: Enable Linear Enable Calibrati ✓ Enable R: 0 G: 0 B: 0 VR: 0 Delay Time of ABC DE Signals Delay of ABC signals: O Enable Delay of DE signals: O Enable No delay: Delay time: 0 0 0 0 0 0 0 0	Additional Function	×
R: Image: Constraint of the second secon	Indicator Light of Rec Shorten the synchroni Brightness becomes EMC Function: Linear	Close Open Enable Enable
Delay of ABC signals: O Enable Delay of DE signals: O Enable No delay: O Enable Delay time: O O ns	R: 0 💌 B: 0 💌	VR: 0 🖨
Delay time: 0 0 ns	Delay of ABC signals:	O Enable
Apply		
OK Cancel	ок	Apply Cancel

EMC function setting is optional. The other functions are described as follows.

- Isolated Pixel Afterglow: Eliminate the afterglow problem of isolated pixels.
 - Indicator Light of Receiving Card: Turn off the operating status indicator of receiving card.
 - Shorten the synchronization time: Shorten the frame interval time during data output of receiving card.
 - Brightness becomes strong slowly: Make the display become brighter slowly after the power is supplied.
- Linear: Increase the loading capacity of receiving card. The linear mode requires that the module connection line is straight, the cabinet does not have data row extraction and the cabinet is not rotated.
- Calibration Threshold: When the grayscale level is less than or equal to the specified level, use the average calibration coefficients, other than the pixel level calibration coefficients. This fixes the display problems in low grayscale after the screen is calibrated, such as mottling, color blocks and grayscale spikes.

The R, G, and B values are hexadecimal and the largest value is FFFF. Before setting them, check the Yaxis value corresponding to the X-axis value (the specified grayscale level) in the Gamma table in the brightness adjustment function, and then convert the Y-axis value to hexadecimal value. If the device does not support individual Gamma adjustment for RGB, set the R, G and B to the same value. The VR value setting is optional.

 Delay Time of ABCDE Signals: Fix the problem that the afterglow cannot be eliminated because the decoding signals are not synchronized. After the settings are done, click **Apply**.

Flash Arrangement



When the module has a flash memory, use this function to set the flash memory arrangement of cabinet. The receiving card reads the calibration coefficients and module IDs from the flash memory via bus.

Before connecting the modules that have flash memory, obtain the bus No. A bus can cascade multiple modules. Then, set the flash arrangement according to the actual connection order.

Physical Arrangement And Settin	g of Module	Flash				- 🗆	×]
Number of Fl 3	Number of Fl.	3			Back	Rese	IAII	
BUS		1	2	3				
1 2 3 4	▶ 1	BUS 1 Serial numt <mark>S-9</mark> 1	BUS 1 Serial	BUS 1 Serial number 2				
5 6 7 8		Width 64 Height 32	Width 64 Height 32	Width 54 Heigh 32				
<u>9</u> 10 11 12	2	BUS 1 Serial numb or 5	BUS 1 Serial	BUS 1 Serial Sumber 3				
13 14 15 16 17 18 19 20		Width 54 Heigh 32	Width 64 Height 32	Width 64 Height 32				
21 22 23 24	3	BUS 1 Serial numbe r 6	BUS 1 Serial	BUS 1 Serial • numt [] 8				
25 26 27 28		Width 64 Height 32	Width 64 Height 32	Width 64 Height 32				
29 30 31 32								$\langle \rangle$
Flash Control Size								
Height 6								
Apply to Curren							1	
Module Parameters Number of d 2								
Apply to Curren.								
Starting X Co 0 😭								
Starting Y Co 0 🖨								
Prompt:After setting wi direction button to set t					ок	Can	cel	

- a. Set the number of flash memory rows and columns. Generally, a module has one flash memory.
- b. Click the bus No.
- c. Set the width and height of the module controlled by the flash memory.
- d. In the arrangement table, click the cells in order according to the actual module connection.

Right clicking a flash memory cell cancels the configuration of that flash memory. Clicking **Back** returns to the previous operation. Clicking **Apply to Current BUS** sets all the flash memories connected to the current bus to the same value.

- e. Set the number of data groups of the module.
- f. If necessary, adjust the start coordinates of the flash memory, otherwise skip this step.
- g. If necessary, click the other bus to continue setting. After the configurations are done, click OK

Monitoring Card Data Set Exchange

When the hardware connections of the monitoring card have errors, use this function to exchange the data groups of the card without the need to reconnect the hardware.

Monitoring care	data set exchange	×
🗹 Enable mor	itoring ca	
	Α ^	4
1	5	
2	6	
3	3	
4	4	
5	1	
▶ 6	2	
7	7	
8	8	
9	9	
10	10	
11	11	
12	12	
13	13	
14	14	
15	15	
16	16 🗸	
Reset	Send Apply Cancel)

- a. Click **Monitoring Card Data Set Exchange**. In the displayed dialog box, select **All Receiving Cards** or specify one receiving card and click **OK**.
- b. In the Monitoring card data set exchange dialog box, select Enable monitoring card data set exchange.
- C. Double click the row in the second column and change the value. For example, change 1 to 5, 2 to 6, 5 to 1, and 6 to 2, indicating that data group 1 is exchanged with data group 5 and data group 2 is exchanged with data group 6.
- d. After the settings are done, click **Send** to send the configuration information to the monitoring card.

Cabinet Information Settings

Set the weight, power, width, height, pixel width, pixel height and voltage of the cabinet base on the actual situation.

💀 Cabinet Inform	mation Settings		D/	×
Weight (kg):	0.00	Power (W):	0.00	
Width (cm):	0.00	Height (cm):	0.00	
Pixel Width:	0	Pixel Height:	0	
Voltage (V):	0.00			
		Apply	Close	



6 Brightness and Chroma Adjustment

6.1 Calibration

6.1.1 Setting Online Calibration Parameters

Applications

Set parameters of displaying image and disable cabliration or set calibration type during online calibration when NovaLCT works with NovaCLB calibration software.

Applicable Products

All receiving cards and sending cards

Prerequisites

- Hardware setup is done.
- NovaCLB calibration software is installed.

Related Information

Screen calibration enables the brightness and chroma of LEDs to reach target values, allowing for balanced images and better display effect.

Operating Procedure

Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click OK.

The default password is "admin".



Step 2 Click Calibration or choose **Tools** > **Calibration** on the menu bar.

Figure 6-1 Screen calibration

ngle-Screen Mode Combined-Sc · ·	Online Calibration Offline Calibration Manage Coefficients Double Calibration Coefficients		
Current Operation Communication Port USB@Port_#0002.Hub_#0001 ~	Network Setting Local IP 172:18.163.60 V Port 8080 Reconnect		
© Screen1	Communication Information 16:32:58 Enable network monitoring successfully		
ettings of Displaying Image Position to Display Image :			
 Extended Display Device Response Time: 			
100 💼 ms Vse input source for display			
nable/Disable Calibration			
Disable Calibration			



- Step 3 Select the Single-Screen Mode tab or Combined-Screen Mode tab.
- Step 4 In single-screen mode, select a communication port and screen. In combined-screen mode, skip this step.
- Step 5 Set the displayed parameters.
 - Position to Display Image: Choose to display the image of the primary or extended monitor on the screen.
 - Device Response Time: In combined-screen mode, setting this parameter allows the display window to fit well
 with the time for camera to take pictures.
 - Use input source for display: Select this option if you want to use a signal source for display. Deselect this
 option if you want to use hardware for display.
 - Enable/Disable Calibration: Disable calibration, or select brightness calibration or chroma calibration. Click Save to apply your settings.
- Step 6 If network monitoring succeeds, open NovaCLB and enter the local IP address and port number displayed on the **Online Calibration** tab page of NovaLCT to connect NovaCLB to NovaLCT.

If network monitoring fails, click Reconnect, or change the port and then click Reconnect.

Step 7 (Optional) Click Export Log to export the communication log, or click Clear to clear the communication log.

6.1.2 Getting Average Coefficients

Applications

Get the average coefficients of a specified area on a screen.

Applicable Products

All receiving cards

Prerequisites

None

Related Information

Offline calibration is not available for combined screens.

Operating Procedure

- Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click OK. The default password is "admin".
- Step 2 Click calibration or choose **Tools** > **Calibration** on the menu bar.
- Step 3 Select the Single-Screen Mode tab.
- Step 4 Select a communication port and screen.
- Step 5 Select the Offline Calibration tab.



splayArea Screen:1 Column Nu	Starting cc Starting cc O O				< 32H	Displ	iy 🚽
Screen:1 Column Nu Row Number		Display	100	* *	< 32H		iy 📄
Row Number	0						ay
Average Calibrati	on Coefficient					Hide	
	0	0	0 0				
splay Parameters	0	0	0			GetAvera	je C.
	Red Green	● Blue	White	Black 40 %			
	Mode All Color F	splay Parameters Mode All V Color <mark>O Red O Green</mark>	splay Parameters Mode All V Color Red Green Blue	splay Parameters Mode All ~ Color Red Green Blue (White	splay Parameters Mode All	splay Parameters Mode All ~ Color Red Green Blue O White Elack	splay Parameters Mode All

- Step 6 Specify an area where you want to get the average calibration coefficients.
- Step 7 Click Get Average Coefficients.
- Step 8 After the average calibration coefficients are obtained successfully, click OK.
- Step 9 (Optional) Click **Display** or **Hide** to show or hide the display window.

6.1.3 Managing Calibration Coefficients

Applications

Upload, save, adjust, erase and reload calibration coefficients.

Applicable Products

All receiving cards

Prerequisites

- If you want to use a database file, you need to prepare it.
- Module flash management requires modules with flash memory.

Related Information

Calibration coefficient management is not available for combined screens. Calibration database files fall into two types:

Screen calibration database file

Saves the coordinates and calibration coefficients of each pixel on a screen. After the location of a cabinet is changed, the calibration coefficients cannot be uploaded to the cabinet.

Cabinet calibration database file

Saves the coordinates and calibration coefficients of each pixel on a cabinet according to the cabinet number. After the location of a cabinet is changed, the calibration coefficients can be uploaded to the cabinet according to the cabinet number.



Module flash memory can store calibration coefficients and module IDs. In the event of network outage, you can hold down the self-test button for 2 seconds to read the calibration coefficients in module flash memory back to the receiving card.

Operating Procedure

Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click OK.

The default password is "admin".



- Step 2 Click calibration or choose **Tools** > **Calibration** on the menu bar.
- Step 3 Select the Single-Screen Mode tab.
- Step 4 Select a communication port and screen.
- Step 5 Select the Manage Coefficients tab.

Figure 6-3 Calibration coefficient management

-	
Screen Calibration	– 🗆 X
Single-Screen Mode Combined-Sc · ·	Online Calibration Offline Calibration Manage Coefficients Double Calibration Coefficients
Current Operation Communication Port USB@Port_#0002.Hub_#0001	Select Operation
Screen1	E Save calibration coefficients to database
	Set coefficients for a new receiving card
	Set coefficients for a new module
	See Adjust coefficients (Color is uniform on screen)
Settings of Displaying Image	✓ Erase or reload calibration coefficients
Position to Display Image: O Primary Display	C Reset calibration coefficients
O Extended Display	Upload coefficinets (for factory use)
Device Response Time:	📥 Module Flash
Use input source for display	
Enable/Disable Calibration	\frown
Disable Calibration	
 Brightness Calibration 	
O Chroma Calibration	

Step 6 Perform the following operations as required. During the operation, you can select **Disable Calibration**, **Brightness Calibration** or **Chroma Calibration** on the left and view the result on the screen after the coefficients are applied.

Upload coefficients

Select the cabinet or screen calibration database file from the PC and fast or stably upload the calibration coefficients to receiving cards. You can also select and upload dark or bright line adjustment file (configuration file of dark or bright line adjustment function for common version) at the same time. Stable uploading takes more time than fast uploading, but it is more stable and reliable.

Save calibration coefficients to database

Save the calibration coefficients in receiving cards to the cabinet or screen calibration database file.

Set coefficients for a new receiving card

Get calibration coefficients by uploading calibration database file or referring to one or more surrounding cabinets. Adjust and save the coefficients to receiving cards as required.

Set coefficients for a new module

Get calibration coefficients by uploading calibration database file or referring to one or more surrounding modules. Adjust and save the coefficients to receiving cards as required.



Adjust coefficients (Color is uniform on screen)

Adjust the current calibration coefficients of receiving cards or adjust the coefficients by referring to the surrounding area. After the adjustment, you can also apply the coefficients to other specified areas.

Erase or reload calibration coefficients

Erase the calibration coefficients in the application areas of receiving cards or reload calibration coefficients from application areas. You are advised to back up the database file before erasing it.

Reset calibration coefficients

Set calibration coefficients to specified values.

Upload coefficients (for factory use)

Upload the calibration coefficients in the cabinet calibration database file to the corresponding cabinets in turn according to the imported cabinet ID and export a screen calibration database file. Stable uploading takes more time than fast uploading, but it is more stable and reliable.

Module Flash

Check module flash memory status, view the calibration coefficients of modules and receiving cards, and save calibration coefficients to receiving cards and modules based on their physical addresses or the topology.

Type "admin" with your keyboard. A Save Calibration Coefficients to Module button is displayed.

When **Auto Upload Module** is selected, if the system detects that a cabinet ID is changed after the control system is powered on, the calibration coefficients in the module flash memory will be automatically uploaded to the receiving card.

Notes

Types and causes of module flash memory check errors:

- Hardware Fault: Screen configuration or flash topology is not consistent with the actual condition.
- Communication Error: There is a problem with hardware connection.
- Flash Topology Error: The module does not have flash memory or no flash topology is configured in **Screen Configuration**.

Related Operations

During coefficient management, three methods are provided for you to select an area for coefficient management.

Figure 6-4 Selecting an area for coefficient management

Screen:1 Starting coordinateX=0, Y=0 Size64¥×32H	
○ Full ○ Select by pbx ● Select by Topology □ Select operat	
	Zoom:
- P'	
	~
	1.0

- Full screen: Manage the coefficients of the entire screen.
- Select by Pixel area: Manage the coefficients of a specified area.
- Select by Topology or List: Manage the coefficients of a specified cabinet, module or pixels. For a standard screen, a cabinet topology is displayed. For a complex screen, a cabinet list is displayed. If it is not convenient



to select an area with the software, you can select **Select Area on Screen** to select the area on the display window.

Two methods are provided for calibration coefficient adjustment. You can display or hide the color window during the adjustment.

Simple Adjustment

As shown in Figure 6-5, drag the slider to adjust the values of red, green and blue. Click **Advanced Adjustment** to open advanced adjustment page.

Advanced Adjustment

As shown in Figure 6-6, drag the slider to adjust the brightness, saturation and hue for red, green and blue, and adjust color temperature. Click **Simple Adjustment** to go back to simple adjustment page.

Figure 6-5 Simple adjustment

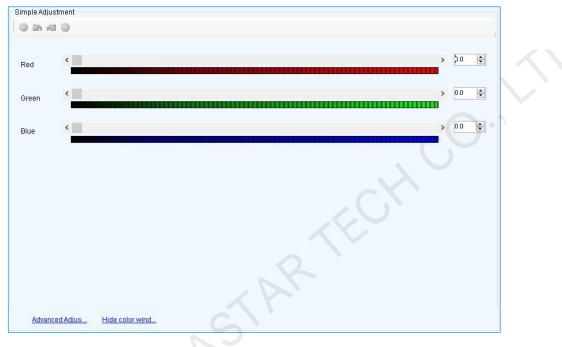


Figure 6-6 Advanced adjustment

Advanced Adjus	tment							
G 🖪 🖉 (Ð							
- Color adjustm	ent of re	ed, green and blue						
		 Red 	C) Green	O Blue			
Brightnes:	<					>	0.0	-
Saturation	<					>	0.0	¢
Hue	۲					>	0.0	* *
Color matching	g of red	, green and blue (Color	Temperature Adjustment) –					
		O Yellow	🔘 Cyan	🔿 Magenta	○ White			
Red	<					>	0.0	-
Green	<					>	0.0	÷
Blue	<					>	0.0	÷
Note: Display (lifferen	t colors for observing the	effect			-		
Simple Ad	justm	Hide color wind						



6.1.4 Managing Double Calibration Coefficients

Applications

View calibration coefficients saved in the application area and factory area, get calibration coefficients in the factory area, and save calibration coefficients to the factory area.

Applicable Products

The A5, A5s, A7, A7s, A8, A8s, A9s and A10s Plus receiving cards

Prerequisites

None

Related Information

Calibration coefficients can be saved in both the factory area and application area of a receiving card. A copy of coefficients is saved in the factory area before a cabinet leaves the factory. The calibration coefficients usually used by users are in the application area. If necessary, calibration coefficients in the factory area can be restored to the application area.

Operating Procedure

Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click OK.

The default password is "admin".



- Step 2 Click calibration or choose Tools > Calibration on the menu bar.
- Step 3 Select the Single-Screen Mode tab or Combined-Screen Mode tab.
- Step 4 In single-screen mode, select a communication port and a screen. In combined-screen mode, skip this step.
- Step 5 Select the **Double Calibration Coefficients** tab.

Figure 6-7 Managing double calibration coefficients

Screen Calibration							-	×
Single-Screen Mode	Combined-Sc 4 +	Online Calibration	Offline Calibration	Manage Coefficients	Double Calibration Coefficients			
Current Operation Communication F USB@Port_#0002 Current Screen	Port			View calibration (coeffi) View calibration coeffi.	Acquisition of factory		
– Settings of Display								
Position to Displ								
Primary Disp								
 Extended Dis 								
Device Respons								
100	💼 ms							
🗹 Use input sou	irce for display							
 Enable/Disable Ca Disable Calibre 	ation							
O Brightness Ca								
O Chroma Calib Save	ration							

Step 6 Perform the following operations as required.



View calibration coefficients in application area

Click View calibration coefficients in application area, select Disable Calibration, Brightness Calibration or Chroma Calibration, and view the application result of calibration coefficients on the screen.

View calibration coefficients in factory area

Click View calibration coefficients in factory area, select Disable Calibration, Brightness Calibration or Chroma Calibration, and view the application result of calibration coefficients on the screen.

Get calibration coefficients in factory area

Click **Acquisition of factory area correction factor** to restore the calibration coefficients from factory area to application area.

Save calibration coefficients to factory area

Type "admin" with your keyboard. A **Save coefficients to factory area** button is displayed. Click the button to save the calibration coefficients in the application area to factory area.

6.2 Adjusting Brightness

6.2.1 Adjusting Brightness Manually

Applications

Manually adjust the scree brightness, Gamma, color temperature and color space to change the brightness and chroma expressiveness of the screen in real time, meeting the environment condition and user needs.

Applicable Products

- Individual Gamma adjustment for RGB:
 - If the bit depth of input source for the sending card is 8bit, the applicable receiving cards include the A4, A4s, A5, A5s, A7, A7s, A8, A8s, A9s and A10s Plus.
 - If the bit depth of input source for the sending card is 10bit or 12bit, the applicable sending cards include the MCTRL1600, MCTRL4K, MCTRL660 PRO, KT8, K16, NovaPro UHD Jr and MCTRL R5.
- Other functions: Applicable to all receiving cards and sending cards

Prerequisites

If individual Gamma adjustment for RGB is used, the module driver chip cannot be ICN2053.

Related Information

Manual brightness adjustment is to set screen brightness manually. After NovaLCT is opened, you can directly perform the steps in Operating Procedure. After logging in to NovaLCT, you can also perform the operations in Custom Gamma, Custom Color Temperature and Custom Color Space of this section.

If the ambient brightness is high, adjust the screen brightness to a higher level to ensure clear display. If the ambient brightness is low, adjust the screen brightness to a lower level to reduce light pollution.

Operating Procedure

Step 1 Click Brightness or choose Settings > Brightness on the menu bar.

- Step 2 Select Manual Adjustment.
- Step 3 Drag the slider to adjust brightness and select Grayscale or Contrast.

Step 4 Click is to expand the advanced settings shown in Figure 6-8 and perform the following operations as required.



Brightne	#0002. Kub_#0001-Soreen1 Manual Adjustment Auto Adjustment Auto Adjustment Auto Adjustment (100%) (100%) (100%) (100%) (100%)	
20100 - 2000 - 2000	155	
20100 - 2000 - 2000		
Brig	htness < 255 (100%)	
	Orayscale	
Gamr		
Gamm	a	
🖲 Gai	mma Valu 🔨 🔰 2.8	
O Cu	stom Configuration	
	*	
	Refresh Save to HW	
		\approx
ad Receiv	ving Card Parameters,Results-Successful	
Adj	just Gamma	
Dra	g the slider to adjust Gamma value.	
Adj	ust color temperature	
Cho	bose Rough Adjustment and drag the slider to adjust the color te	mperature. Or choose Precise
Adj	justment and click a custom color temperature to use it, such as	Precise A 9600
	ust color space	
	able color space, enable a standard color space (PAL/NTSC), or e	enable a custom color space, such as

Step 5 After the configuration is done, click **Save to HW** to save the configuration to the hardware.

Custom Gamma

- Step 1 On the Gamma Adjustment page, select Custom Gamma Adjustment.
- Step 2 Click **Configuration** to open the dialog box shown in Figure 6-9.



Figure 6-9 Custom Gamma adjustment

Gamma Adjustment				×
Gamma Adjustme Red Gamma Grayscale Bit Val 12	een Gamma	🔘 Blue Gamma		
Gamma table can be generated quickly by adjusting	Gamma tal	ble can be fine-adjusted by e	diting the values	5
X-axis Range 0 255 👻	х	Ŷ	Move U	
Y-axis Range 0 🚽 65535 🐳	▶ 0	0		
	1	0	Move Do	w
2.6	2	0	Save	
Recommended Gamma	3	1	Save	
Original O Mode A O Mode B	4	1	Load	
	5	2		
Picture Quality	6	4		
Soft Mode Soft Mode	7	6		
	8	8		
	9	11		
	10	14		
	11	18		
	12	23		
	13	29		
	14	35		
	15	41		
	16	49		
		Send	Exit	

- Step 3 If the control system supports individual Gamma adjustment for RGB, choose to adjust the Gamma curve for red, green and blue individually. Otherwise, skip this step.
- Step 4 Perform any of the following operations as required to configure the Gamma curve.
 - Load a Gamma configuration file

Click Load to load a Gamma configuration file.

Adjust the Gamma curve manually

Drag the slider to adjust the Gamma curve.

Adjust the Gamma table manually

Double click a value in the Y column to edit the value, and select a value in the Y column and click **Move Up** or **Move Down**.

Step 5 Set relevant parameters.

- Grayscale Bit Value: Use the default value.
- X-axis Range: It indicates the range of X-axis for Gamma curve. The X-axis ranges for 8-bit, 10-bit and 12-bit input sources are 0–255, 0–1023 and 0–4095 respectively.
- Y-axis Range: It indicates the range of Y-axis for Gamma curve. The range is always 0–65535.
- Recommended Gamma: The original mode is contrast preferred and Mode A is grayscale preferred. Mode B falls between those two modes.
- Picture Quality: When the Gamma curve is in Mode A or B, the picture quality can be set to soft mode or enhanced mode.
- Step 6 After the settings are done, click **Send** to send the configuration to the hardware.
- Step 7 (Optional) Click Save to save the Gamma information as a configuration file.

Custom Color Temperature

- Step 1 On the Color Temperature Adjustment page, select Precise Adjustment.
- Step 2 Click to open the dialog box shown in Figure 6-10.



Figure 6-10 Custom color temperature

tvanced (olor Config	uration							×	1
/ difeed o	olor coning									
creen	USB@Po	rt_#0002.Hub_#0001	-Screen1	Import	Export			Ret	resh	
lor Temper	ature Table									
Operatio	n prompts									
The col	or temperati	ure name box of se	lected color temper	ature section is yello	W .					
Add'- ac	id color tem	perature section								
Delete'-	delete the s	selected color temp	erature section							
Edit' - to	edit the sel	ected color tempera	ature section (includ	ling the deletion of t	ne selected row, clea	r the information in th	ie current color temp	perature section	1)	
Color ter	nperature	Brightness value	R gain	G gain	B gain	R brightness	G brightness	B brightnes	s	
Add	Edit	Delete C	lear					Saved to	local	
19/11/28	17:41:54TI	he screen informati	on has been read s	successfully						
									>	
e screen i	nformation h	has been read succ	essfully							
00100111	monnation	140 20011044 3400	ooorant.							1

- Step 3 If you have a color temperature configuration file (.fcg), click Import to complete the configuration quickly. If you do not have a color temperature configuration file, continue performing the following operations to manually complete the configuration.
- Step 4 Click Add to open the dialog box shown in Figure 6-11.

F	igure 6-11	Adding	color ter	mperatur	e informa	ation		
£	dd Color Tem	nperature In	formation					×
	Color Temper	atu <mark>9600</mark>						
	Brightness	Red gain	Green gain	Blue gain	Red brightness	Green brightness	Blue brightness	Add Brightness
	100%	100.00%	100.00%	100.00%	255(100	255(100	255(100	Edit
								Delete
								Clear
	. D							
								ок
								Exit

Step 5 Click Add Brightness to open the dialog box shown in Figure 6-12.

Figure 6-12 Adding brightness information

Add Brightness Information	×
Set Color Temperature Information Brightness Value 🗐 % Current Gain	
R <	> ~ %
G	> ~ %
B	> ~ %
Synchronize	
Brightness Component	
R <	> 229 🚖 (89.80%)
GK	> 229 🚖 (89.80%)
8 <	> 229 🔶 (89.80%)
Synchronize	
Add	Exit

Step 6 Add color temperature information corresponding to the specified brightness values.

Current Gain is a color temperature parameter of modules. This parameter can be set when supported by module chips. **Brightness Component** is a color temperature parameter of receiving cards. If **Synchronize** is selected, the R, G and B parameters will be set to the same value. You can edit, delete and clear the color temperature information if necessary.

- Step 7 After the configuration is done, click **Save to local** to save the custom color temperature. A corresponding button will be displayed next to **Precise Adjustment**.
- Step 8 (Optional) Click Export to save the current color temperature information as a configuration file.

Custom Color Space

Step 1 On the Color Space Adjustment page, click _____ to open the dialog box shown in Figure 6-13.

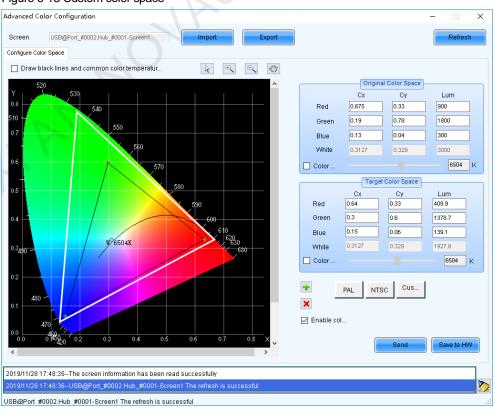


Figure 6-13 Custom color space



Step 2 Set the original color space.

The white triangle represents the original color space. The target color space is configured based on the original color space. You are advised to use a colorimeter to measure the original color space of the screen and then enter the measured values in the original color space table.

Step 3 Perform any of the following operations as required to set custom color space.

Select a standard color space

Click PAL or NTSC to use one of the standard color spaces.

Select an existing custom color space

If there is a custom color space, click to use it. If not, click **Import** to import a custom color space, or click to create a custom color space and then click to use it.

Adjust the color space diagram manually

Drag vertexes of the black triangle in the diagram on the left to adjust the target color space. If **Draw black lines and common color temperature points** is selected, a black curve (color temperature curve) and some common color temperature points (solid round spots) will be displayed in the diagram.

Adjust the color space values manually

Change the parameter values in the target color space table for precise adjustment.

- Step 4 After the configuration is done, select **Enable color space adjustment** to apply the target color space, and click **Send** to send the configuration information to the hardware.
- Step 5 Click **Save to HW** to save the information to the hardware.

6.2.2 Adjusting Brightness Automatically

Applications

Set rules for automatic brightness adjustment, allowing NovaLCT or sending cards to automatically adjust screen brightness.

Applicable Products

All sending cards

Prerequisites

When screen brightness is adjusted based on ambient brightness, a light sensor must be connected to the sending card or multifunction card.

If the light sensor is connected to the multifunction card, peripheral configuration needs to be completed on multifunction card management page.

Related Information

After you configure the automatic brightness adjustment, two adjustment modes are provided.

Software adjustment mode

NovaLCT automatically adjusts screen brightness. This mode takes effect when the control computer is connected to the sending card and monitoring is running. Combined-screen brightness, color temperature and Gamma must be adjusted and night mode must be enabled with the software.

The adjustment process will be recorded as a log which can be exported and viewed in iCare of VNNOX cloud platform.

Hardware adjustment mode

The sending card automatically adjusts screen brightness. This mode takes effect when the control computer and sending card are disconnected or monitoring stops running.

Combined screens do not support this mode.

The adjustment process will not be recorded as a log.



Operating Procedure

. 🤅

Step 1 Click Brightness or choose Settings > Brightness from the menu bar.

- Step 2 Select Auto Adjustment.
- Step 3 Click Wizard Settings.

If the auto adjustment table is configured, you can add, delete and modify items in the table, or click **Light Sensor Configuration** to set light sensor information.

Step 4 Select an adjustment mode as required and click Next.

Advanced adjustment

Screen brightness is adjusted by time periods. You can choose to adjust screen brightness according to specified brightness or ambient brightness.

Wizard SettingsTime Points Set	ttings	-	×	
Automatically Adjustment Table —		Add	Clearlist	
Start Adjusting Time	Adjustment Method	Brightness (%)		
				$ (\cdot)$
Please Note				
1. When computer is disconnected	d from hardware, the system	will turn to hardware adju	stment mod	
2. Only adjust brightness, but not c		ia.		
3. Do not record brightness adjust	tment log.			
		Previous	Finish	
. Click Add.				
Set the start time	e and adjustment	method and the	en click O l	Κ.
Adjust the Time Setti	ing	×		
Starting Ti 1000	1			
Adjust Type 💿 S	pecified 🔿 Envi	ronme		
Brightness ¹⁰		÷ %		
More Settings				
	ОК	Cancel		
c. Click More Setti	ings to set color t	emperature and	d Gamma	vale

The options in the drop-down box next to color temperature are the custom color temperatures.

d. After the settings are done, click **Cancel** to close the dialog box.



As shown in the figure below, the two configuration items denote that screen brightness will be adjusted to 80% from 8:00 to 18:00 and adjusted to the corresponding values in the brightness mapping table according to ambient brightness from 18:00 to 8:00 of the next day.

	Start Adjusting Time	Adjustment Method	Brightness (%)		
\checkmark	08:00	Specified Brightness	80	<u>Edit</u>	<u>Delete</u>
\square	18:00	Environment Brightness		<u>Edit</u>	<u>Delete</u>

e. If there is no Environment Brightness under Adjustment Method, click Finish. If there is Environment Brightness under Adjustment Method, click Next and complete light sensor settings according to the description in Light Sensor Adjustment below.

Light sensor adjustment

Screen brightness is adjusted according to ambient brightness. Set the corresponding relations between ambient brightness and screen brightness in the ambient brightness mapping table.

Wizard Settings	Light Sensor Settir	ngs		_	
Light Sensor Cor	nfiguration Table	Light 9	ensor T	efresh	lear Failed Li.
Whether to Enable	Location	Environment Brightness	From	Remark	
light sensor will b	e invalid when usir	nsor to the first send ng hardware adjustn	nent mode (Com	puter and han	
		orightness should b. nent brightness scr		0 ₽ %	ast Section D.
Environmental B	rightness (Lux)		Prightness (%)	l	
20 1218		40			
2416		44			
3614		52			
4812		56			
6010		60			
7200		4.9			¥
Night mode			Offlin	ie work is not	supported
Brightness maxi	mum(%) Sta	rt time(h)	End tim	ie(h)	-
	Ċ	JP			X
			Previ	ious	Finish

a. Click Light Sensor Test to test the light sensors connected to the control system, including the light sensors connected to all sending cards and multifunction cards.

If you want to clear the ineffective light sensor information, click Clear Failed Light Sensor Information.

b. (Optional) Select **When the light sensor fails, the brightness should be adjusted to** and set a brightness value.

If this option is not selected, the screen brightness will keep the last updated brightness value when the light sensor fails.

c. Click 📰 or 送, or click Fast Section Division to set the brightness mapping table.

Fast section division can equally divide the ambient brightness range and screen brightness range into the specified number of segments.

d. (Optional) Select **Opening** to enable night mode and set the maximum brightness of the specified time period.

When surrounding lights interfere with the light sensor or an exception occurs when the light sensor is collecting ambient brightness data, screen brightness may be too high. This can be avoided in night mode. If the start time and end time are the same, night mode takes effect all the time.

e. Click Finish.

Step 5 After the settings are done, click **Save**.



- Step 6 (Optional) Click Export Log to export the brightness adjustment log in software adjustment mode.
- Step 7 (Optional) Set the advanced parameters of auto brightness adjustment.

1.	On the taskbar, cli	ck 📫	and choose Brightness	Advanced	Settings
----	---------------------	------	-----------------------	----------	----------

Smart Brightness Adjustment	×	
✓ Enable Brightness Gradient		
Automatic brightness adjustment information		
Environment brightm 60 🛊 S		
Times of reading en 5		
Note: Under the automatic brightness adjustment mode, we need to calculate the average value of light sensor afte times of readings before adjusting the brightness of screen, and then adjust the screen brightness according the curve formed by enviro	er N	
Save Cano	cel	

- 2. Select Enable Brightness Gradient. Screen brightness will gradually change to the target value.
- 3. Set the cycle and number of times for the light sensor to measure ambient brightness.

For example, if the cycle is 60 seconds and number of times is 5, the light sensor will measure ambient brightness every 60 seconds. After 5 times of measurement, NovaLCT will calculate the average of the measured values without the maximum and minimum ones. This average value is ambient brightness. If multiple light sensors are connected, NovaLCT will calculate the average of all the ambient brightness values.

4. Click Save.

6.3 Adjusting Multi-batch Cabinets

Applications

Adjust the chroma of cabinets or modules from multiple batches to make the overall screen chroma more uniform.

Applicable Products

All receiving cards

Prerequisites

None

Related Information

None

Operating Procedure

Step 1 On the menu bar, choose Tools > Multi-batch Adjustment.

Step 2 Select Manual Adjustment.

If you have a configuration file, select **Apply Adjustment File** to quickly complete chroma adjustment for cabinets from multiple batches.



Figure 6-14 Multi-batch adjustment

i-Batch Adjustment - Initialization		_		×	
Operation Type					
Manual Adjustment	O Apply Adjustment File				
Colorimeter					
Select Colorimeter:	No Colorimeter	~			
			Next		

Step 3 If no colorimeter is connected, select **No Colorimeter**. If a colorimeter is connected, select the colorimeter type and set its measurement accuracy.

Step 4 Click Next.

Step 5 Set the parameters of a sample batch.

Figure 6-15 Setting sample batch

Multi-Batch Adjustme	ent - Add Sample Batch — 🗆	×						
Add Delete In	Second Se							
Batch Name Sample Batches1	Sample Information							
Sample Batches2 Information of The Current LED Display Communication P USB@Port_#0001.H Select Displa Display Screen: Image: Main Display Extended Display								
Sample Area Information No. LED Display X Y W H								
	Measurement Value of Colorimeter Display Screen Brightness Cx Cy Red Green Blue							
	Previous							

1. (Optional) Select Fixed Batches, Adjust Other Batches to The Batch.

Fixed sample batch is for reference and cannot be adjusted. All the sample batches can be adjusted without a fixed batch.

- 2. Select a communication port and screen.
- 3. Select a position to display image.



4. Click 🛨 to specify an operating area for the fixed sample batch.

			_		×
Screen:1 Starting coordinate	X=0, Y=0 Size64W×	32H			
O Screen O Pixel	Topology or List	Select Are	a o		
(1,1)				Zoom:	
Hidden Screen (ESC)	🗌 Select More thar	n One Area	Add	Complete	

- Pixel: Perform operations in a specified area.
- Topology or List: Perform operations on a specified module or pixels. If it is not convenient to specify an
 area with the software, you can select Select Area on Screen to specify an area on the display window.
- 5. Click **Red**, **Bue** and **Bue** in order to measure **Brightness**, **Cx** and **Cy** by using a colorimeter and enter the measured values. If no colorimeter is connected, skip this step.

Measurement Value o	f Colorimeter		
Display Screen	Brightness	Сх	Су
Red	120.40	0.6882	0.3098
Green	273.20	0.1562	0.7226
Blue	60.77	0.1259	0.0688

Step 6 Set other sample batches.

- 1. Import, add or delete other sample batches as required.
- 2. Select a sample batch and specify an operating area by following 4 in Step 5.
- 3. Enter the values measured by the colorimeter by following 5 in Step 5. If no colorimeter is connected, skip this step.

Step 7 Click Next.

Step 8 View the preliminary adjustment result, select a result option and click **Next**. If no colorimeter is connected, skip this step.

Figure 6-16 View the preliminary adjustment result
--

Ilti-Batch Adjustment - Watch Initial Adjustment Effect —	
View Preliminary Result	
Automatic Switching Interval 3 🚔 Second Switching (1-60 se	
Brightn < 50)%
Enable Correction	
Result Selection	
O Satisfactory (Enter Color Temperature Adjustment)	
O Not Satisfactory (Enter Fine Adjustment of Batch)	× 1
Previous	Next

Selecting Automatic Switching automatically switches the display color. Selecting Enable Correction allows you to view the calibration result.

- If the calibration result is satisfactory, go to Step 10.
- If the calibration result is not satisfactory, go to Step 9.

Step 9 Fine tune the sample batch.

Figure 6-17 Fine tuning a sample batch

Multi-Batch Adjustment - Sample Batch Adjustment 🦳 — 🗆 🗙
Delete Export
Name Display Sample Batch Image: Color Sample Batch Image: Color Brightness: Image: Color Brightness: Image: Solution of the solution
Red Brig Green C Blue Co Blue Co Balanced Balanced Description
Previous Next

- Select the sample batch to be displayed. 1.
- 2. Select a display color.
- 3. Drag the slider to adjust brightness.
- 4. Select **RGB** or **HIS** and adjust the coefficients of red, green and blue.



You can click Withdraw to restore the coefficients.

5. (Optional) Click **Balanced** and perform balanced adjustment for the sample batch in the dialog box that appears. Click **Balanced Description** to see the detailed description of balanced adjustment.

Balanced adjustment - Red, green and blue	– 🗆 X
Reference Batch Selection Reference Batch: Sample Batches1 V	
Balanced Adjustment (Red, Green, Blue) Adjustment Mode: RGB) HSI
Red Coefficient Green Coefficient Blue Coefficient	
Red Brig <	> 2047
Green C <	> 6 🜲
Blue Co <	> 0 🔶
	Cancel Adjust
	Next

6. Click Next.

Step 10 Select Adjust Color Temperature. Drag the slider to adjust color temperature and view the effect.

Figure 6-18 Adjusting color temperature	
Multi-Batch Adjustment - Color Temperature Adjustment	×
Color Temperature Adjustment	
Color Temperat < S500 € K Effect View	
Brightness: Automatic Switching University Second Switching (1-60	
Automatic Switching Interval 3 Second Switching (1-60 seconds)	
A l	
Previous	Next

Step 11 After the adjustment is done, click Next.

Step 12 Click Add Areas to select the areas where the adjustment effect will be applied.

Figure 6-19 Applying adjustment effect

5 11	, 0	,						
Multi-Batch Adjustme	ent - Appl	y of Adjustment Results				—		
Apply Adjustment								
Batch Name								
Sample Batches1	No.	Regional Information	LED	Apply	Cancellati	Deletion		
Sample Batches2	1	USB@Port_#0003.Hub_#000	reen on LE	Apply	Cancel	Delete	Display	
	1						L the C	
							Add Areas	
							Apply All	
							Cancel All	
	Er Er	nable Correction 📃 Display	All Batches		Save	File	Save to Flash	
				6				
					Previous		Complete	

Step 13 Click Display screen on LED display to view the adjustment effect.

- Enable Correction: After this option is selected, you can view the calibration result.
- Display All Batches: After this option is selected, all sample batches are displayed.
- Step 14 Click Apply or Apply All.
- Step 15 Click Save to Flash to save the configuration to the hardware.
- Step 16 (Optional) Click Save File to save the configuration as a file (.lxy).
- Step 17 Click Complete and OK.

6.4 Adjusting Dark or Bright Lines

Applications

Adjust dark or bright lines between cabinets or modules to improve visual experience.

Applicable Products

All receiving cards

Prerequisites

None

Related Information

None

Operating Procedure

Step 1 On the menu bar, choose Tools > Quickly Adjust Dark or Bright Lines > Adjust Dark or Bright Lines.

If you have a configuration file for dark or bright line adjustment, choose **Recover Dark or Bright Lines** to quickly complete dark or bright line adjustment.

Step 2 Click the corresponding Quickly Adjust button according to the receiving card type and adjust dark or bright lines.



Figure 6-20 Adjusting dark or bright lines

Quickly Adjust Dark or Bright Lines	×
Common Version	Ax series, MRV308, MRV328, MRV316, MRV366,DF30, Axs V4.4.0.0 and later versio
Quickly Adjust	Quickly Adjust

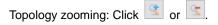
Common version

Quickly Adjust [Dark or Bright Lines					– 🗆 X
- Select Screen					Operation Instruct	ions and Attentions
		l Numb 1 🗸 F	Position of O Main s	cre 🧹 📃 Moduel	H Moduel Size 32 🔶 🗙 32	Drawing
Topology Grap Prompt: Ye	h Stitching llow means to select all pixel	s, while green means t	o select some pixels.	Sele	ction Op 🔽 Row Di 🔽 Colum	221
1	2	3	4	5		
6	7	8	9	10		5
11	12	13	14	15		
16	17	18	19	20		
	-			25		
21	22	23	24	23		
-Adjust Dark or	Bright Lines			🗌 Dis	play Seri 🔲 Lock Selection 🗌 F	Hide Topolo
Method		White Price	ority			
Color	O Red	O Green	O Blue	 White 		Save to HW
Adjust	•	<u>1.000</u>		1.000	Save to user area Restore to user	Saved to File

- a. Select a communication port and screen.
- b. Select a position to display image, including main screen and extended screen.
- c. To adjust dark or bright lines between modules, select **Module-level Adjustment**, set module size and then click **Drawing**. To adjust dark or bright lines between cabinets, skip this step.
- d. On the topology, select a target to adjust.

Selection methods: Click borders and corners, click and drag the mouse to select borders and corners, or double click borders to select pixels.

Deselection methods: Click selected borders and corners to deselect them or click is to deselect all the selected borders and corners.



Selection options: Select **Row Direction** to select horizontal borders and corners by clicking and drag the mouse. Select **Column Direction** to select vertical borders and corners by clicking and drag the mouse.

- e. (Optional) Select **Display Serial Number**, **Lock Selection** or **Hide Topology Graph** to display the cabinet or module numbers on the display window and lock or hide the topology.
- f. Select **Red**, **Green and Blue Priority** to adjust the coefficients of red, green and blue, or select **White Priority** to adjust the overall coefficient.
- g. After the settings are done, click Save to HW to save the configuration to receiving cards.
- h. (Optional) Click Save to File to save the configuration as a file.



Notes

- Clicking Save to user area saves the configuration to the application areas of receiving cards.
- Clicking Restore to user area restores the configuration of dark or bright lines according to the application areas of receiving cards.

Supported receiving cards: Ax series, MRV308, MRV328, MRV316, MRV366, DF30, Axs V4.4.0.0 and later

O Seam B	Brightness Ac	ljustment														-		×
Modu	Cabi	Row (A)	Row (S)	Column (D)	Clea (F1)	Deselect (F2)	** Clea (F12)	CHHI Show (Z)	No. Show (29	a librat		w Screen dis	•	íindow Coloi (Alt+C)	s	icreen Brightn (- +)	ess	÷
Screen1	1															_		
																►Q (२ 1:1	
							1	2	3	٤	6							
							6	7	8	9	10							
							1	12	13	14	15							
							16	17	18	19	20							
							21	22	23	24	25							
	Selected Area	Parameter Adjus	stment — 0.	3		<u>1.000</u>	1.200	1.000	Precisio	n 0.0	5	No Video S Note: Support o						
																Save to H	łWV	

- a. Click to select module mode or click to select cabinet mode.
- b. Select a display color.
- c. Drag the slider to adjust screen brightness.
- d. Click drop-down box for display.

by: Disable calibration, select chroma calibration or brightness calibration.

- Show or hide the display window.
- e. Click or select the borders to be adjusted.
 - : Select all the borders.
 - : Select horizontal borders.
 - : Select vertical borders.
 - End of the second secon
 - No: Show or hide module or cabinet numbers.
 - Soom out the topology.
 - E: Zoom in the topology.
 - III: Map the topology to the display window (1:1).
 - E: Auto fit the topology to the canvas.
- f. Set the precision of adjustment and drag the slider to adjust the coefficient.
- g. After the settings are done, click Save to HW to save the configuration to the hardware.

Note

If receiving cards are AXs V4.5.0.0 and later, you can select **No Video Source** to use hardware for display. Receiving cards do not require an input video source.



6.5 Correcting Brighter Pixels

Applications

Correct brightness of pixels that are brighter or darker than normal to fix the problem that the pixel brightness of the screen is not uniform after calibration.

Applicable Products

All receiving cards and sending cards

Prerequisites

Cabinets of the screen are calibrated or the entire screen is calibrated and the cabinet or screen calibration database file is saved.

Related Information

None

Operating Procedure

Step 1 On the menu bar, choose Tools > More > Brighter Pixel Correction.

Figure 6-21 Brighter pixel correction

🛃 Brighter Pixel Correction				- 0	- X
Topology Simulat	🗹 Sho 🛛 🗹 Show 🗍 💽 💽	Select Display Display: Display		D Extende	~
		Screen b			30%
		Import Database	● Cabinat	O Full	
		Database	S Cabinet		Browse
		Cabinet.			~
				Read Co	efficients
		Coefficie Adv	anced		
		Select			Reset
		N0.	Colum Row F	Red Green	Blue
		_		•	100%
			Averade G: B:		
		R0-	Gjest Bjest		
		Upload	Save to HV	Save	Datab

Step 2 Select a screen.

- Step 3 Select a position to display image.
- Step 4 Set the brightness of the display window.
- Step 5 Select a database type, for example, **Cabinet**.
- Step 6 Click Browse and select a database file. For example, select a cabinet calibration database file and click Open.
- Step 7 On the **Topology** page, select an area and then select the **Simulation Diagram** tab.
- Step 8 Click brighter pixels or select the area where there are brighter pixels and click \checkmark .
 - Click to select a brighter pixel.
 - Select brighter pixels by clicking and dragging the mouse to form a selection box.



• Select brighter pixels by clicking and dragging the mouse to form a selection oval.

😸 Brighter Pixel Correction						-		×
Topology Simulati	ĸ	 2 2	Select Display Display:	1				
			Display	Main	0	Extende.		
			Screen b				30%	
			-Import Databas	e				
			Database	Cabin	et 🗢	Full		
			Database	G:ILCT资料	抗化wiangt	iCLB.db	Brove	rse
			Cabinet:	1-1			~	
_						Read	Coefficie	ents
			Coefficie A	dvanced				
			Select				Rese	/t
			No.	Colun R		Green		^
			✓ 1	34 15			2047	
			2	34 16			2047	
			23	34 17	2047		2047	
			 ✓ 4 ✓ 5 	34 18 34 19	2047		2047 2047	
				34 19	2047		2047	
				35 16	2047		2047	
				35 17	2047		2047	
			M 9	35 18	2047		2047	~
							~	
			_				10	00%
				Averac				
				C2047 G(2)	47 B:2047			
			Upload	8	we to HVV	Sa	we Datab	.

Figure 6-22 Selecting brighter pixels

- Step 9 Select Coefficient Adjustment or Advanced to adjust coefficients.
- Step 10 After the settings are done, click Upload to save the configuration to the hardware.
- Step 11 Click Save to HW to save the configuration to the hardware.
- Step 12 (Optional) Click Save Database to save the configuration to the current database file.

6.6 Setting Advanced Color

Applications

Improve the display effect of a screen by setting screen brightness, color space, color temperature, etc.

Applicable Products

- Color adjustment: Applicable to the NovaPro HD
- Other functions: Applicable to all sending cards

Prerequisites

None

Related Information

None

Operating Procedure

- Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click OK. The default password is "admin".
- Step 2 Choose Settings > Advanced Color Configuration.
- Step 3 Click **Import** to quickly complete the configuration or continue performing the following operations to complete the configuration manually.
- Step 4 On the Factory Setting tab page, adjust parameters and then click Save to HW.



Figure 6-	23 Factory settings	
Advanced Colo	or Configuration	– 🗆 X
Screen	USB@Port_#0002 Hub_#0001-Screen1 v	Export
Factory Setting	Configure Color Space Color Temperature Table Color Adjustment	
Current G	ain	
R	<	> 100 %
G	<	> 100 %
в	¢	> 100 %
S	ynchronize	Default Value
RGB Brig	htness	
R	٢	> 255 (100.0%)
G	٢	> 255 (100.0%)
в	¢	> 255 (100.0%)
S	ynchronize	
		Save to HW
		C^{O}
2019/12/4 11:0	4:38The screen information has been read successfully	
The screen info	rmation has been read successfully	

- Current Gain: This is a module parameter and can be set when supported by module chips. Clicking Default Value can reset the value.
- RGB Brightness: This is a receiving card parameter.

If Synchronize is selected, the R, G and B parameters will be set to the same value.

Step 5 Select Configure Color Space to set color space.

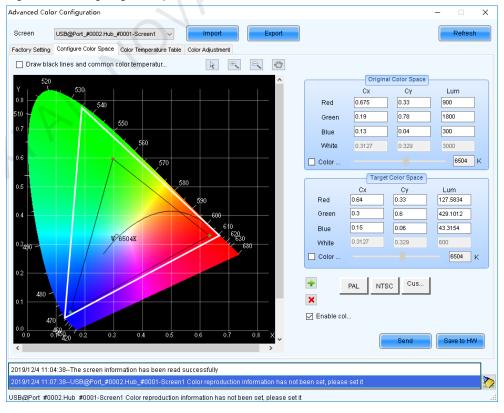


Figure 6-24 Configuring color space

1. Set the original color space.

The white triangle represents the original color space. The target color space is configured based on the original color space. You are advised to use a colorimeter to measure the original color space of the screen and then enter the measured values in the original color space table.

- 2. Perform any of the following operations as required to set custom color space.
 - Select a standard color space

Click **PAL** or **NTSC** to use one of the standard color spaces.

Select an existing custom color space

If there is a custom color space, click to use it. If not, click Import to import a custom color space, or click

to create a custom color space and then click to use it.

Adjust the color space diagram manually

Drag vertexes of the black triangle in the diagram on the left to adjust the target color space. If **Draw black lines and common color temperature point** is selected, a black curve (color temperature curve) and some common color temperature points (solid round spots) will be displayed in the diagram.

Adjust the color space values manually

Change the parameter values in the target color space table for precise adjustment.

- 3. After the configuration is done, select **Enable color space adjustment** to apply the target color space, and click **Send** to send the configuration information to the hardware.
- 4. Click **Save to HW** to save the configuration to the hardware.
- Step 6 Select Color Temperature Table to set color temperature.

Figure 6-25 Color temperature table

Advanced Color	Configuration			X		- 🗆 🗙	
	JSB@Port_#0002.Hub Configure Color Space	-	Import Color Adjustment	Export			Refresh
Operation pr The color te Add'- add co Delete'- dele	ompts mperature name bo lor temperature sec ete the selected colo	x of selected color temp	erature section is ye		r the information in th	ne current color temp	perature section)
Color tempe	Edit Delete	value R gain	<u>G gain</u>	8 gain	R brightness	G brightness	B brightness
2019/12/4 11:13	:40Read Receiving	g Card Parameters,Res	ulte -Successful				
		rmation has been read					- >
The screen infor	mation has been rea	ad successfully					.:

- 1. Click Add to open the dialog box shown in Figure 6-26.
- 2. Click Add Brightness to open the dialog box shown in Figure 6-27.
- 3. Add color temperature information corresponding to specified brightness values.

Current Gain is a color temperature parameter of modules. The parameter can be set when module chips support current gain. **Brightness Component** is a color temperature parameter of receiving card. If **Synchronize** is selected, the R, G and B parameters will be set to the same value. You can edit, delete and clear the color temperature information if necessary.



4. After the configuration is done, click Save to local to save the custom color temperature.

Figure 6-26 Adding color temperature information

Add Color Ten	operature In	formation					×
Add Color Tell		ormation					~
Color Temper	atu 9600						
Brightness	Red gain	Green gain	Blue gain	Red brightness	Green brightness	Blue brightnes	s Add Brightness
100%	100.00%	100.00%	100.00%	255(100	255(100	255(100	Edit
							Delete
							Clear
							ок
							Exit
Figure 6-27	7 Addina	brightne	ss inforn	nation			
Add Brightn	ess Inform	ation				×	
- Set Color	Temperatur	e Informati	on				
Brightne	ss Value 🚦	0	%				
Current G	ain —						
R <				>		%	
G <				>		%	
Β <				>		%	
Synch	ronize						

Add Brightness Information	×
Set Color Temperature Information Brightness Value 📴 %	
Current Gain	
R <	> ~ %
G <	> ~ %
8 <	> ~ %
Synchronize	
Brightness Component	
R <	> 229 🔹 (89.80%)
<mark>6</mark> <	> 229 🚖 (89.80%)
В <	> 229 🚖 (89.80%)
Synchronize	
Add	Exit

Step 7 For the NovaPro HD, select Color Adjustment to set the hue, contrast and saturation of the screen. This function is not available for other products.



-igure 6-28	8 Adjusting color				
Advanced Color (Configuration			- 🗆	×
Screen US	SB@Port_#0002.Hub_#0001-Screen1 V	Import Export		Refres	sh
Factory Setting Co	onfigure Color Space Color Temperature Table Color	Adjustment			
Hue Adjustmen	nt				
Hue	٢		> 0		
- ContrastAdjust Contrast	tment <		> 50	%	
- Saturation Adju	istment				
Saturation	¢		> 50	%	
2019/12/2 17:26:6	59The screen information has been read succes	ssfully			
The screen inform	ation has been read successfully				.::

Step 8 (Optional) Click **Export** to save the configuration as a file.

6.7 Adjusting Screen Effect

Applications

Enable 18bit+, ClearView and low latency, and set HDR parameters to improve display effect.

Applicable Products

- 18bit+: Applicable to the A8, A8s and A10s Plus receiving cards
- ClearView: Applicable to the A8, A8s and A10s Plus receiving cards
- Low latency: Applicable to the A6s, A8s, A10s Plus and AT60 receiving cards, and the MCTRL4K, MCTRL1600 and MCTRL660 PRO sending cards
- HDR: Applicable to the sending cards that support 10-bit or 12-bit input sources

Prerequisites

- During HDR settings, the hardware must support HDR and an HDR10 or HLG input source is also required.
- HDR and ClearView cannot be enabled simultaneously.
- Low latency and 3D function cannot be enabled simultaneously.

Related Information

18bit+ can improve LED display grayscale by 4 times, avoiding grayscale loss due to low brightness and allowing for smoother images.

ClearView make texture, size, and contrast adjustments on different areas of the display image, creating a more realistic image.

Enabling either sending card low latency or receiving card low latency can reduce the delay by one frame. Enabling both can reduce the delay by two frames.



Operating Procedure

- Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click OK. The default password is "admin".
- Step 2 Choose Settings > Adjust screen effect to open the dialog box shown in Figure 6-29.

Figure 6-29 Screen effect adjustment

Adjust screen effect					- [\times	
USB@Port_#0001.Hub	_#0001-Screen1	1						
Parameter Settings								
Enable 18								
Enable	<		>	0 (Save to) HW		
🗌 Enable sendi	na car	🗌 Enable rec	eivina car					
HDR Parameter Se	ettings							
Enable		~			Restore	defaul	ts	
Peak Screen	<		>	1000 cd/m	2			
Ambient Light:	<		>	30 Lux				
Low Graysca	<		>	15				
Tip: Current	t source is not	HDR10. Please cor	nnect an HDF	R10 video s	ource.			
Screen Information							X	
2020/1/19 16:03:1	7Read receiv	/ing card low latenc	y parameters	s successf				
2020/1/19 16:03:1	7Reading HI	DR parameters						
2020/1/19 16:03:1	7HDR paran	neters read success	sfully.					
						Clear		
				7				

Step 3 Perform any of the following operations as required.

Enable 18-bit mode (18bit+)

Select Enable 18-bit mode and click Save to HW.

Enable ClearView

Select Enable ClearView, drag the slider to adjust the value and then click Save to HW.

Enable low latency

Select **Enable sending card low latency** and **Enable receiving card low latency** or either of them, and click **Save to HW**. Enabling either of them can reduce the delay by one frame. Enabling both can reduce the latency by two frames.

Set HDR parameters

Select Enable, select HDR10 or HLG from the drop-down box and complete relevant settings.

HDR Parameter S	ettings –				
🗹 Enable	HDR10		~		Restore defaults
		_			
Peak Screen	<			>	4835 cd/m2
Ambient Light:	<			>	40 Lux
Low Graysca	<			>	26

6.8 Setting Image Booster Engine

After the receiving card parameters are adjusted and the configuration file is generated, you can use the Image Booster Engine to further improve the display effect.

4



6.8.1 Screen Calibration

Applications

Use a colorimeter to measure the color gamut and grayscale of LED screen, and then set the 22bit+, precise grayscale and color management functions to improve the display color and grayscale precision, and allow for free switching of display color gamut.

Applicable Products

The A8s and A10s Plus receiving cards

Prerequisites

- The receiving card program package is updated.
 - The A8s program package must be V4.6.4.0 or later.
 - The A10s Plus program package must be V4.6.5.0 or later.
 - The colorimeter is supported and the colorimeter connection is done.

Currently supported colorimeters: CA-410, CS-150, CS-100A and CS-2000

Notice

Adjusting receiving card parameters affects the display effect.

Related Information

The Image Booster Engine has the following 3 functions which improve the display effect (the actual effect depends on the driver IC) from different dimensions.

• Color Management

Allow you to freely switch the color gamut of LED display, including multiple standard color gamuts and a custom color gamut, and let the LED display have more precise colors.

Precise Grayscal

Correct the 65,536 levels of grayscale (16bit) of driver IC individually to fix the display problems at low grayscale conditions, such as brightness spikes, brightness dips, color cast and mottling. This function can also better assist other display technologies, such as 22bit+ and individual Gamma adjustment for RGB, allowing for a smoother and uniform image.

22bit+

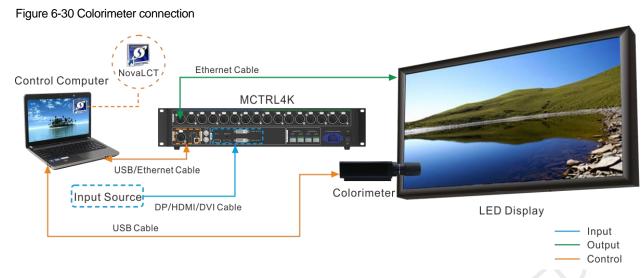
Improve the LED display grayscale by 64 times, avoiding grayscale loss due to low brightness and allowing for a smoother image.

When you measure the color gamut and grayscale of LED screen, you must use the colorimeter to collect the grayscale data of red, green and blue in order. The supported colorimeters are described in Table 6-1. Figure 6-30 uses the CA-410 as an example to show the hardware connection.

Table 6-1 Colorimeters

Model	Measurement Distance (Darkroom)	Data Collection Speed
CA-410 (Recommended)	Touch the screen	About 7 min
CS-150	30 cm	About 3–4 h
CS-100A	1 m	About 3–4 h
CS-2000	1 m	About 3–4 h





Operating Procedure

Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click Login.

The default password is "admin".

Step 2 On the main window, click in next to the rightmost function icon to open the drop-down list and then click

Image Booster Engine

Step 3 Select a communication port and a screen that you want to calibrate.

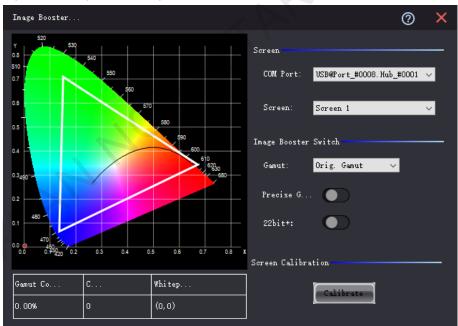


Figure 6-31 Image Booster Engine

Step 4 Click **Calibrate** to open the function page shown in Figure 6-32.

Figure 6-32 Screen calibration

	omen in the second seco				_ ×.
Clar Radgesis Reiseling Gregerals Bars Mirriburtion Driginal Clar Sent Bars	Import Quality Adjustment Fil	e 📝 Export Qualit			Colorimeter CA410V Disconnect 🥝 Connected
intermediation intermediation </td <td></td> <td></td> <td>Grayscale Data Distribut:</td> <td>ion</td> <td></td>			Grayscale Data Distribut:	ion	
Green 1796.57 0.17 0.73 Blue 291.38 0.13 0.08 Vite 3120 0.2863 0.2949 Original Color Tg: Gent Tg: Gent Respent Time: Gaut Coverage: Gaut Coverage: Gaut Braciss Gregner 22bit* Theorem I high theses:		Brightness			
Blue 291.38 0.13 0.06 White 3120 0.2003 0.2949 Original Caler************************************	Red	809.05	0.69	0.3	
Blue 291.38 0.13 0.08 White 3120 0.2863 0.2949 Original Color Tgt. Genut Tgt. Genut Color Grayzelle Freeise Grayzette	Green	1796.57	0.17	0. 73	
White 3120 0.2863 0.2849 — Original Calor:: Tgt: Gaut Tgt: Gaut Calor 0** Original Calor:: Q: Evaluate Color: Vite Tgt: Gaut Maagement Time: Gaut Usage: Zbit* Zbit* Guige of the point Usage: Whitepoint: Whitepoint: Maagement Time: Calor 0** Zbit*	Blue	291.38	0.13	0.08	
 Original Color Tgt. Gaut Management Time: Gaut Coverage: Gaut Usage: This time: Minite time: This time: T	White		0.2863	0.2949	
Powered by NovaStar			Managament Time; kanut Coverage; kanut Usage; hitepoint;		Grayneile Precise Grayne" 💽 226it
				Pow	ered by NovaStar

NovaLCT will connect to the colorimeter automatically. If you see Connected, the connection is successful. If the connection fails, see 12.4 Failed to connect colorimeter to troubleshoot the problem.

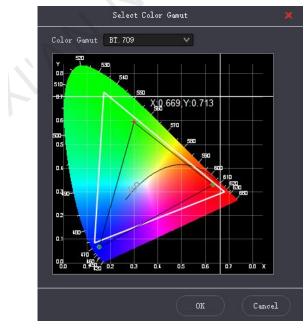
To disconnect the colorimeter, click **Disconnect**.

- Step 5 Do one of the following operations as required.
 - If you have an image quality adjustment file (.vglc), click Import Quality Adjustment File and go to Step 8.
 - If you do not have the file, go to Step 6.
- Step 6 Set the measurement options. You can select one or both.
 - Measure color gamut: Measure the original and target color gamuts of the LED screen.
 - Measure grayscale: Measure the grayscale of the LED screen.

Two methods of setting the target color gamut are provided:

• Use a standard color gamut

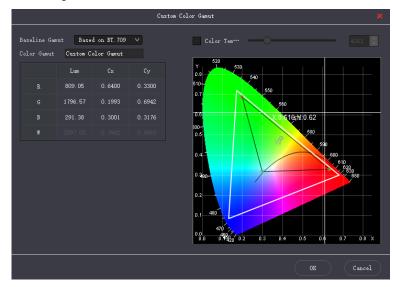
NovaLCT has used some standard color gamuts by default. If you want to change any of them, click the color gamut name to open the page shown below, select a color gamut and click **OK**.



Customize a color gamut



Click **Custom Color Gamut**, set the baseline gamut and color gamut name, and double click the cells to change the values. If you want to adjust the color temperature value, select **Color Temperature** and set it. After the settings are done, click **OK**.



Step 7 Click Start to start measuring.

During the measuring, you can pause or stop measuring. If you manually stop measuring, or the measuring stops or exits due to exceptions, next time when you want to measure color gamut and grayscale, you can choose to continue measuring by resuming the interrupted measuring.

Step 8 Select a color gamut, set the precise grayscale and 22bit+ switches, and view the effect on the screen.

If the BT.709 color gamut is selected, the **Color Enhancing** switch is available, as shown in Figure 6-33. Turning on the switch can enhance the color display effect.

🌍 Image Booster Engine				
Import Quality Adjus	tmen 🔀 Export	Qu		Colorineter CA410" Disconnect 📀 Connected
Original Color Gama	olor Analysis Brief" t Data	Grayscale Data Di	str	 ● 1 Measurement Settings ✓ Measure color gamut <u>BT_F2</u> <u>skok</u> <u>Custom Color:</u> ✓ Measure grayscale
	Brightness			• 2 Data Measurement
Red	119.707	0.685681	0.313701	Uploaded successfully. You can check the effect now. 100%
Green	258.252	0.143864	0.736483	Start Time Remaining; 00:00:00
Blue	38.0803	0.13017	0.0656545	
White	418.566	0.296425	0.316776	• 3 Vier Effect Color *** BT. 709(99, 13%) • O Color En*** Q Evaluate Col
- Origina		Management Time: Ganut Coverage: Ganut Usage: Whitepoint: Measured Brightness:	2020-04-30 99.136 60.166 X: 0.3127 Y: 0.3290 418.566 nit	drays Precise Gr 22bit+

Figure 6-33 Color enhancing

After you select a gamut, the **Color Analysis Briefing** tab page will display the related information.

- Management Time: The date when the measuring is done
- Gamut Coverage: The LED screen color gamut coverage of the target color gamut, expressed as a percentage
- Gamut Usage: The LED screen color gamut coverage of the original color gamut, expressed as a percentage
- Whitepoint: The coordinates of white in the color gamut diagram
- Measured Brightness: The maximum brightness of whitepoint. Different color gamuts have the same maximum brightness of whitepoint.



The 22bit+ function can be enabled alone. However, if you want to enable the precise grayscale function, the 22bit+ function must be also enabled.

- Step 9 Repeat Step 8 to change the color gamut and the switch status until the display effect meets the actual needs.
- Step 10 (Optional) Click Export Quality Adjustment File to save the configuration information as a file.
- Step 11 If you want to evaluate the color precision, do the following:
 - 1. Click Evaluate Clor Precision.

			Color Evaluation			
lor Evaluation						
🔵 BT. 709 🛛 🔵 D	ICI-P3 sRGB	NSTC C	Custom Color			
Start Evaluation				Display Demo Au	to Switching Interval 2s	
Standard Color	Color Value	CIE31 (Ley)	Measured Value Before …	DeltaE	Measured Value (Lxy)	DeltaE
	#745244					
	#d9792f					
	#2e3e95					
	#f6f3ed					
	#c49582					
	#455ca3					
	#45924a					
	#c8c8c7					
	#5c799b					
	#065562					
	#b12d38					
	#9e9e9f					
	#5b6b45					
	#5a3d67					
	#ebc32f					
	#777978					
	#827fac					
	#9db848					
	#bd5290					
	#535454					
	#5dbaa8					
	#e39e34					
	#0083s2					
	#363637					

- 2. Select a color gamut and click Start Evaluation.
- 3. After the evaluation is done, click **OK**.
- 4. Select Display Demo.
- 5. Click any of the colors in the table and check their effect on the LED screen. Or, you can set the auto color switching interval and then click **Start Demo** to check the effects of all colors on the screen.

				Color Evaluation			
	Color Evaluation						
	BT. 709 DC.	I-P3 sRGB	🔘 NSTC 📃 C	Sustom Color			
	Start Evaluation	Export Report			Display Demo A	uto Switching Interval 23	
	Standard Color	Color Value	CIE31 (Lxy)	easured Value Before -	DeltaE	Teasured Value (Lxy)	DeltaE
. N		#745244	197.5643, 0.3657, 0.3466	216.6000, 0.2969, 0.2716	29.24	195.3000, 0.3375, 0.3156	
		#d9792f	308.3389, 0.4446, 0.3971	324.7000, 0.3871, 0.3419	27.27	299.3000, 0.4229, 0.3777	11.04
		#2e3e95	145.3035, 0.2271, 0.2306	178.3000, 0.1837, 0.1634	36.77	152.8000, 0.2089, 0.2004	13.95
		#f6f3ed	531.6939, 0.3158, 0.3317	592.0000, 0.2528, 0.2503	43.55	530.9000, 0.2900, 0.2976	16.94
		#c49582	351.1056, 0.3533, 0.3423	385.7000, 0.2856, 0.2662	35. 73	347.2000, 0.3252, 0.3110	14.18
· · · ·		#455ca3	202.7866, 0.2467, 0.2633	239.9000, 0.1967, 0.1881	37.77	209.2000, 0.2254, 0.2297	14.53
		#45924a	253.9056, 0.2848, 0.4120	279.0000, 0.2297, 0.3211	29.72	251.1000, 0.2659, 0.3735	12.28
		#c8c8c7	436.9469, 0.3131, 0.3295	486.6000, 0.2499, 0.2481	40.99	435.6000, 0.2864, 0.2947	16.27
		#5с799Ъ	253.9104, 0.2693, 0.3003	291.4000, 0.2138, 0.2188	37.18	257.4000, 0.2462, 0.2651	14.25
		#c65562	260.3226, 0.3995, 0.3180	283.3000, 0.3250, 0.2500	32.93	256.5000, 0.3666, 0.2911	13.03
		#b12d38	184.4590, 0.4584, 0.3160	197.2000, 0.3844, 0.2578	27.73	180.1000, 0.4246, 0.2933	11.66
		#9e9e9f	345.5964, 0.3122, 0.3283	384.8000, 0.2489, 0.2471	37.92	344.4000, 0.2853, 0.2930	15.29
		#5b6b45	215.0615, 0.3264, 0.3763	235.2000, 0.2637, 0.2935	29.25	212.6000, 0.3017, 0.3422	11.73
		#5 a3 d67	161.3117, 0.3112, 0.2776	184.9000, 0.2451, 0.2048	32.28	163.2000, 0.2817, 0.2463	12.31
		#ebc32f	417.7014, 0.4187, 0.4402	438.8000, 0.3659, 0.3869	27.92	403.7000, 0.4013, 0.4226	10.84
		#777978	262.9957, 0.3116, 0.3299	293.0000, 0.2484, 0.2482	34.63	262.6000, 0.2847, 0.2947	13.84
		#827fac	289.8043, 0.2921, 0.2962	330.1000, 0.2310, 0.2176	38.59	292.1000, 0.2658, 0.2616	15.18
		#9db848	359.4737, 0.3560, 0.4228	384.4000, 0.2961, 0.3480	30.68	350.5000, 0.3346, 0.3941	12.26
		#bd5290	261.1788, 0.3588, 0.2816	292.8000, 0.2839, 0.2124	36.63	261.1000, 0.3243, 0.2526	14.22
		#535454	182.9789, 0.3115, 0.3290	203.9000, 0.2481, 0.2475	30. 70	182.1000, 0.2847, 0.2940	12.22
		#5 db a a8	343.5698, 0.2582, 0.3416	387.4000, 0.2061, 0.2512	38.62	344.6000, 0.2385, 0.3021	15.56
		#e39e34	364.7970, 0.4261, 0.4151	383.3000, 0.3692, 0.3581	28.41	352.9000, 0.4047, 0.3950	11.64
		#0083a2	210.4998, 0.1642, 0.2974	252.7000, 0.1417, 0.2072	39.92	217.7000, 0.1602, 0.2546	18.46
		#363637	118.2652, 0.3113, 0.3270	132.0000, 0.2481, 0.2455	26.75	118.2000, 0.2850, 0.2917	10.71

CIE31: The standard value of brightness, Cx and Cy of the color



- Measured Value Before MGMT.: The measured value of brightness, Cx and Cy of the color in the original color gamut
- Measured Value: The measured value of brightness, Cx and Cy of the color in the target color gamut
- DeltaE: The deviation between the measured value and standard value
- 6. Deselect **Display Demo**, click **Export Report** to save the evaluation result as a file.

6.8.2 Quick Setting

Applications

Quickly set the 22bit+, precise grayscale and color management functions of Image Booster Engine to improve the display color and grayscale precision, and allow for free switching of display color gamut.

Applicable Products

The A8s and A10s Plus receiving cards

Prerequisites

- The receiving card program package is updated.
 - The A8s program package must be V4.6.4.0 or later.
 - The A10s Plus program package must be V4.6.5.0 or later.
- Before you set the precise grayscale and color management functions, the screen calibration must be done. For screen calibration operations, see 6.8.1 Screen Calibration.

Notice

After the Image Booster Engine is set, adjusting receiving card parameters will affect the display effect.

Related Information

The Image Booster Engine has the following 3 functions which improve the display effect (the actual effect depends on the driver IC) from different dimensions.

Color Management

Allow you to freely switch the color gamut of LED display, including multiple standard color gamuts and a custom color gamut, and let the LED display have more precise colors.

Precise Grayscale

Correct the 65,536 levels of grayscale (16bit) of driver IC individually to fix the display problems at low grayscale conditions, such as brightness spikes, brightness dips, color cast and mottling. This function can also better assist other display technologies, such as 22bit+ and individual Gamma adjustment for RGB, allowing for a smoother and uniform image.

+ 22bit+

Improve the LED display grayscale by 64 times, avoiding grayscale loss due to low brightness and allowing for a smoother image.

Operating Procedure

Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click Login.

The default password is "admin".

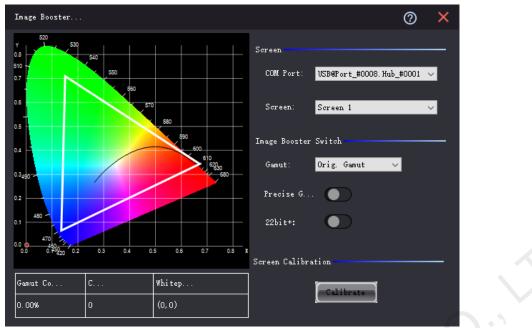
Step 2 On the main window, click in next to the rightmost function icon to open the drop-down list and then click

Image Booster Engine

Step 3 Select a communication port and a screen that you want to set.



Figure 6-34 Image Booster Engine



Step 4 Select a color gamut, set the precise grayscale and 22bit+ switches, and view the effect on the screen.

After you select a gamut, the page will display the related information.

- Gamut Coverage: The LED screen color gamut coverage of the target color gamut, expressed as a percentage
- Color Temperature: The color temperature value
- Whitepoint Coordinates: The coordinates of white in the color gamut diagram

The 22bit+ function can be enabled alone. However, if you want to enable the precise grayscale function, the 22bit+ function must be also enabled.

Step 5 Repeat Step 4 to change the color gamut and the switch status until the display effect meets the actual needs.

7 Screen Monitoring

7.1 Registering Screens with iCare

Applications

Register yours screens with iCare of NovaStar VNNOX cloud platform to perform centralized monitoring of the working status of all screens from a remote place.

Applicable Products

All screens

Prerequisites

A VNNOX account that can be used normally is available.

Related Information

When multiple screens are connected to the control PC, all these screen will be registered with VNNOX.

Operating Procedure



Step 1 Click Monitoring or choose Tools > Monitoring on the menu bar.

- Step 2 Click Configuration.
- Step 3 On the Refresh Period tab page, select Link to NovaiCare, and then click Save and OK.

MonitorSite - Settings × Refresh Period Hardware Settings Refresh Period Alarn Set Rereading Times Nonitoring Con Email Link to HovaiCare Email Log Link to MovaiCare Save
Hardware Settings Alarm Honitoring Con. Email Email Log Refresh Period Period: © S Set Rereading Times Units to read status, the O Times Link to HovaiCare Link to HovaiCare Link to NovaiCare

Step 4 On the desktop taskbar, right click ¹, select **Exit** and click **OK**.



Step 5 Click Monitoring to start the monitoring function again.



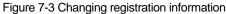


Step 6 Click Cloud Monitoring or choose Settings > Cloud Monitoring on the menu bar.

Figure 7-2 Registering screens with iCare

0	0	0		
Registration	I.			×
Server:	China		Vser:	Refresh
Screen	Name	Width	Height	Registration State
USB@Port_#0	003. Hub	64	32	32
				Modify Regis

Step 7 Click Modify Registration.



creen Re	gistration		×	
0	Server	China 🗸		
0	Enter User Name			
_	Enter Screen Nam Screen <mark>SB@Port</mark>	e #0003 <u>Hub_</u> #0001-Screen]	KA	
			2	
			Register	

- Step 8 Select a server, and enter the VNNOX user name and the screen name. Click Register.
- Step 9 After the registration is done, click **OK**.

7.2 Monitoring Hardware

7.2.1 Monitoring

Applications

Configure the monitoring parameters to monitor the statuses of sending cards, receiving cards, receiving card temperatures, monitoring devices, as well as humidity, smoke, fans, power supplies, cables, cabinet doors, modules, iCare within the control system, in order to detect abnormalities and handle them in time.

Applicable Products

 Use monitoring card for monitoring: Applicable to the MON300 monitoring card. This card works with the MRV320 receiving card.



- Use smart modules for monitoring: Applicable to the A4, A4s, A5, A5s, A7, A7s, A8, A8s, A9s, A10s Plus, XC200, XC100 and B4s receiving cards. The smart module monitoring function is a customized function of the receiving cards.
- Use hub products for monitoring: Applicable to the A4, A4s, A5, A5s, A7, A7s, A8, A8s, A9s, A10s Plus, XC200 and XC100 receiving cards. Using hub product for monitoring is an optional function of the receiving cards.

Prerequisites

- If you want to use the monitoring function of monitoring card, a monitoring card should be used between the module and receiving card.
- If you want to use the email service, the SMTP server address and port must be known in advance.

Related Information

When the monitoring card is used, hub monitoring and smart module cannot be used. Hub monitoring and smart module can be used simultaneously.

Operating Procedure

 $\sim \sim$

Step 1 Click Monitoring or choose **Tools** > **Monitoring** on the menu bar.



Monitoring	X
~	
Monitoring	Monitoring (Trial)

Step 2 Choose **Monitoring** to open the monitoring page.

You can also right click is on the desktop taskbar and select **Open MonitorSite** to open the monitoring page.

MonitorSite V2.6	– 🗆 X
USB@Fort_#0003. Hub_#0001-Screen1 Image: Contract of the state	Zooming 0.40
Image: Second state Image: Second sta	Normal Fault Voltage E Unknown
Fault (alarm) Information Quantity of Faulted Receiving Card Cards: 0 with Voltage Exception: 0	Monitoring R Configuration
Screen Name Image: Content of the state of	
Care status:Online	

Note:

- - - - -

- Click **Monitoring Refresh** to manually refresh the monitoring information.
- On the desktop taskbar, right click and select **Reload Screen** to refresh the receiving card topology diagram.
- Step 3 Click the monitoring item on the left or at the bottom of the page to view the detailed monitoring information.
- Step 4 Click **Configuration** to set the monitoring parameters.

Refresh Period

MonitorSite - Settin	gs		×
Refresh Period			
Hardware Settings	Refresh Period		
Hardware Settings	Automatic Refresh Refresh Period:	60 🗘 S	
Alarm	Set Rereading Times		
Monitoring Con	When failing to read status, the software will read	0 Times	
Email	Link to NovaiCare		
Email Log	⊠ Link to NovaiCare		
		Save	

Set the necessary items as follows and click **Save** to save the settings.



- Select **Automatic Refresh** to set the refresh period. The monitoring information will be refreshed based on the set time period. If the screen is registered with iCare, this item must be selected.
- Set the reread times when the reading of the monitoring information from the receiving card fails.
- Select Link to NovaiCare to enable iCare to get the monitoring information.

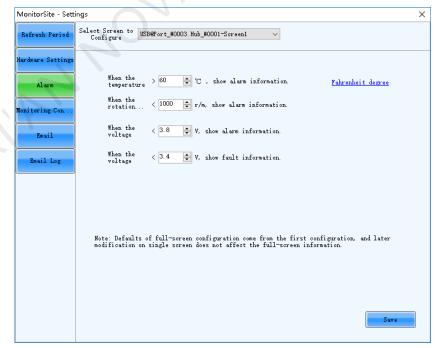
Hardware Settings

MonitorSite - Sett	ngs	×	
Refresh Period	Select Screen to USB@Port_#0003. Kub_#0001-Screen1 V		
Hardware Settings Alarm	Connect to Monitori Connect to HUB Monitoring		
Monitoring Con Email	Connect to Smart Module Use 2 receiving car Refresh Backup Power Supply Backup Power Supply Quantity 2		
Email Log	Refresh Humidity Refresh Smoke Refresh Ribbon Cable Refresh Cabinet Door Status	J	
	Refresh Fan Fan Pulse: 1 Set fan quantity uniformly		
	Set fan quantity individually Setting Refresh Power Supply of Monitoring Card The numbers of power supplies on eac		
	Set power supply quantity individually Setting		
	Save		

Set the necessary items as follows and click Save to save the settings.

- Select Connect to Monitoring Card and set the monitoring items. Click Setting to set the number of monitoring cards connected to each cabinet. The number is 0 or 1.
- Select Connect to HUB Monitoring and set the monitoring items.
- Select **Connect to Smart Module** and set the monitoring items.
- Select Connect to HUB Monitoring and Connect to Smart Module, and then set the monitoring items.

🕈 🛛 Alarm



Set the alarm thresholds for temperature, fan rotating speed and voltage. When the threshold value is exceeded, faults or alarms will be displayed. After the configuration is done, click **Save** to save the settings.

Monitoring Control



MonitorSite - Settings			×
Refresh Period Select Screen to Configure	SB@Port_#0003.Hub_#0001-Screen1	~	
fardware Settings Control Informati	on List		
Alarm	уре	Condition	
AL ST III			
Ionitoring Con			
Email			
Email Log			
Add Edit	Delete Clear list		OK

Set the rules for automatic control of smoke, temperature and dual backup power supply. If the control type is set to smoke, a multifunction card must be configured in advance. After the settings are done, click **OK**.

🕈 Email

MonitorSite - Settin	gs
Refresh Period	Enable Email Notification Send email when same fault/ 3 Times sending Enable System Recovery Notification
Hardware Settings	Enable Sending System Report Email
Alarm	Send system report email regularly
Tonitoring Con	Email Address novalct@novastar.tech Fort 25 SMTP Server smtp.giye.163.com SSL Encryption Enable
Email	Modify Sender
Email Log	Recipient Name Email address 111 nova_huixy0126.com
	Emil Information Sending Email A-1 (e.g.:Neighborhood A. Square B)
2	Tip: If the display has been registered with NovaiCare, please disable local Email notification
Y I	Save

Select Enable Email Notification. Set the necessary items as follows and click Save to save the settings.

- Set the condition for sending an email notification, namely how many times the same fault or alarm occurs consecutively.
- Select Enable System Recovery Notification to send email notification when the fault or alarm recovers.
- Select Enable Sending System Report Email and click Send system report email regularly to set the email sending period and time.
- Click **Modify Sender** to change the email service related settings.
- Add, edit or delete the recipients.
- Set where the email is sent from.
- Email Log



eriod Log Time	- 2019年12月	4日	•	Refresh Delete Log
ttings Notification Time	Recipients	Title	Notifica	tion Content
Con				
og				
og				
<				

View or delete the email log. Enable the email notification function before log operations.

7.2.2 Monitoring (Trial)

Applications

Configure the monitoring parameters to monitor the statuses of sending cards, receiving cards, receiving card temperatures, monitoring devices, as well as humidity, smoke, fans, power supplies, flat cables, cabinet doors, modules, etc. within the control system, in order to detect abnormalities and handle them in time.

Applicable Products

- Use monitoring card for monitoring: Applicable to the MON300 monitoring card. This card works with the MRV320 receiving card.
- Use smart module for monitoring: Applicable to the A4, A4s, A5, A5s, A7, A7s, A8, A8s, A9s, A10s Plus, XC200, XC100 and B4s receiving cards. The smart module monitoring function is a customized function of the receiving cards.
- Use hub product for monitoring: Applicable to the A4, A4s, A5, A5s, A7, A7s, A8, A8s, A9s, A10s Plus, XC200 and XC100 receiving cards. Using hub product for monitoring is an optional function of the receiving cards.

Prerequisites

If you want to use the monitoring function of monitoring card, a monitoring card should be used between the module and receiving card.

Related Information

When the monitoring card is used, hub monitoring and smart module cannot be used. Hub monitoring and smart module can be used simultaneously.

Operating Procedure

Step 1 Click Monitoring or choose **Tools** > **Monitoring** on the menu bar.



83

Figure 7-6 Monitoring type

Monitoring			×
	~	- \ -	
м	onitoring	Monitoring (Trial)	

Step 2 Choose Monitoring (Trial) to open the monitoring page.

Figure 7-7 Monitoring (Trial)

Monitor	= - u X
	+ 🔿 Refresh data
Alarm Info: Start reading the screen information. 2020-01-19 10:57:03	

- Step 3 Add a monitoring page.
 - 1. On the top right of the page, click +.
 - Right click the monitoring page name and choose Rename from the displayed menu. In the displayed menu, you can also choose to refresh or delete the monitoring page.
 - 3. Enter a name and press **Enter** or click on the other position on the page.
 - If necessary, you can add multiple monitoring pages. The figure below has two monitoring pages added and their names are **Home0** and **Home1**, respectively.

Home0	Home1		+ 🗘 Refresh d
		· · · · · · · · · · · · · · · · · · ·	
	+		

Step 4 Add a monitoring item.

1. In the dashed box, click 📩 to open the Add Monitoring Item dialog box.

	Add Monit	oring Item	×
Туре	Primary RV Card Backup RV Card	Grade	
Real-Time Monitoring	Search	✓ Fault	
	USB@Port <u>#</u> 0001.Hub_#0001-0	✓ Alarm	
		✓ Normal	
	Title		
			Cancel Add
Select the commun	ication port and monitoring	g grade, set a title and c	lick Add.
he Backup RV Ca	ard button is currently una	vailable.	

3. Click **OK**.

2.

If necessary, you can add multiple monitoring items.

- Step 5 Check the monitoring information.
 - 1. Click **Refresh data** to obtain the monitoring information.
 - 2. Check the monitoring information summary.

Monitor			=_ □
Home0	Home1		+ C Refres
Real-Time Monitoring-U	SB@Port_#0001.Hub_#0001-0	×	
φ <u>α</u>			
1*MCTRL660_F			
T-WCIKL000	ro		
0		T T	
Cabi	net: Total: 1 Fault: 0 Alarm: 0		
Alarm Info:			

The displayed items in the summary are relevant to the monitoring parameters. For configuration of monitoring parameters, see Step 6.

Description of the monitoring information summary:

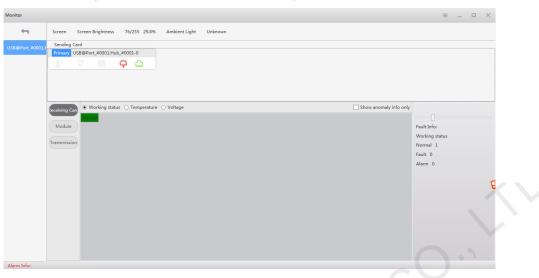
- In the first row of the label, you can see the monitoring information, quantity and name of the sending card.
 In the figure above for example, you can see that the video source signal of sending card has a fault (\$\vec{\$\$\$}\$), the Ethernet port is normal (\$\vec{\$\$\$\$}\$), the sending card quantity is 1 and the name is MCTRL660_Pro.
- In the second row of the label, you can see statuses of the receiving card, receiving card temperature, monitoring device, humidity, smoke, fans, power supplies, flat cables, cabinet doors, modules, etc. The figure above indicates that the receiving card status is normal (1).

Description of icon colors:

- Green: Normal



- Yellow: Alarm
- Red: Fault
- Gray: Unknown
- 3. Click a monitoring item to check the detailed monitoring information.



The displayed items in the detailed information are relevant to the monitoring parameters. For configuration of monitoring parameters, see <u>Step 6</u>.

Description of the detailed information:

- Check the screen brightness and ambient brightness.
- Check the monitoring information of the sending card.
- Check the monitoring information related with the cabinet, receiving card, module and transmission, and perform LED error detection on the module.
- Step 6 On the top right of the page, click to configure the monitoring parameters.

	Monitoring Configuration X
Monitoring Policy	Refresh Method
Hardware Configuration	
Alarm Threshold	Refresh manually O Refresh periodically O Refresh on schedule
Monitoring Control	
LED Error Detection	When failed to refresh monitoring data, refresh 1 , time(s) again
	Save

Monitoring Policy

Select a refresh method and click **Save** after the settings are done.

- Refresh manually: Click Refresh data to manually refresh the monitoring information.
- Refresh periodically: Set the refresh period and the system will automatically refresh the monitoring information according to the set refresh period.
- Refresh on schedule: Set the rule of refreshing the monitoring information on schedule.

 When failed to refresh monitoring data, refresh xx time(s) again: Set how many times the system rereads the monitoring information from the receiving card when it fails to read the information.

Hardware Configuration

Monitoring Policy Select Screen USB@Port #0001.Hub #000 * Hardware Configuration Connected with monitoring card Settings Alarm Threshold Connected with Hub monitoring Connected with smart module Monitoring Control Connected with Hub monitoring Connected with smart module LED Error Detection Cabinet Humidity Smoke Cabinet door switch Fan Power Use multiple power supplies for backup
Alarm Threshold Monitoring Control LED Error Detection Cabinet Cabinet Cabinet Fan Power Cabinet Cabinet Cabinet Cabinet Cabinet Cabinet Cab
Alarm Threshold Connected with Hub monitoring Connected with smart module Monitoring Control Cabinet LED Error Detection Humidity Smoke Cabinet door switch Fan Power
LED Error Detection Cabinet door switch
LED Error Detection Humidity Smoke Cabinet door switch Fan Power
Use multiple power supplies for backup
~ Module
Flat cable Module voltage Module temperature
Save Apply to All Screens

Perform any of the operations below and click Save or Apply to All Screens after the settings are done.

- Select **Connected with monitoring card** and set the monitoring items. Click **Settings** to set the number of monitoring cards connected to each cabinet. The number is 0 or 1.
- Select **Connected with Hub monitoring** and set the monitoring items.
- Select Connected with smart module and set the monitoring items.
- Select Connected with Hub monitoring and Connected with smart module, and set the monitoring items.

	Monitoring Configuration	2
Monitoring Policy Hardware Configuratio	Select Screen USB@Port_#0001.Hub_#000 *	
Alarm Threshold Monitoring Control	-30 120 When temperature for the construction of the construction	
LED Error Detection	0 When speed < 1000 RPM, show an alarm	
	0 3.8 5.5 When voltage < 3.8 V, show an alarm When voltage < 3.4 V, show a fault	
	Alarm Notification Method	
	Save Apply to All Screens	

Perform any of the operations below and click Save or Apply to All Screens after the settings are done.

- Set the alarm thresholds for temperature, fan rotating speed and voltage. When the threshold value is
 exceeded, faults or alarms will be displayed.
- Set the alarm notification method.
- Monitoring Control

Alarm Threshold

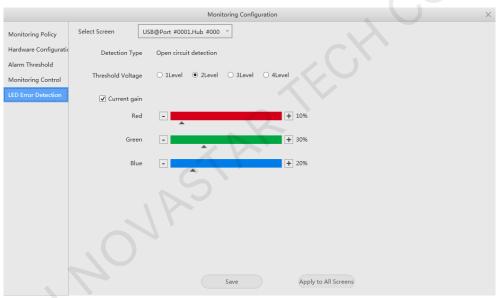
4



		Monitoring Configuration	×
Monitoring Policy	Select Screen USB@Port_#0001	LHub_#000 V	
Hardware Configuratio	Condition	Action	# H
Alarm Threshold Monitoring Control	Avg temperature ~ 0 °C ≤ Ten	mperature < 0 Adjust screen brightness to 0 % Manage Power	
LED Error Detection			
		Save Apply to All Screens	

Set the rules for automatic control of average temperature, maximum temperature, smoke and backup power supply. If the control type is set to smoke, a multifunction card must be configured in advance. After the settings are done, click **Save** or **Apply to All Screens**.

LED Error Detection



Set the LED error detection parameters. After the settings are done, click Save or Apply to All Screens.

Detection Type: The detection types supported by the driver chip

Threshold Voltage: The level of the threshold voltage of the driver chip, which can be set based on the information provided by the screen manufacturer

Current gain: Select whether to enable the current gain function. You can adjust the current gain.

8 Screen Management

8.1 Multi-function Card Management

Applications

Configure the multifunction card, and perform power management, monitoring data viewing, peripheral settings, program loading and audio management.

Applicable Products

The MFN300 multifunction card

Prerequisites

Hardware connections for the multifunction card are done.

Related Information

None

Operating Procedure



Step 1 Click Multi-function Card or choose Settings > Multi-function Card on the menu bar.

Figure 8-1 Multifunction card management

Multi-function Card Management	×
Add Remove Refresh Rename =	
Power Management Monitoring Data Peripheral Device Load Program Audio Managemen	t

Step 2 Click Add and select the connection type for the multifunction card.

- Serial Port Connection: Select this option when the serial port of the multifunction card is connected to the USB port of the PC.
- Ethernet Port Connection: Select this option when the Ethernet port of the multifunction card is connected to that of the sending card or receiving card.



You can also remove, refresh or rename the added connections.

For serial port connection, you can perform the following operations:

- Modify Serial Port: Change the current serial port to the one that is not configured for the multifunction card.
- Replace Serial Port: Replace the current serial port with the one that is connected with the multifunction card.

Step 3 For serial port connection, choose a communication port and click OK.

For Ethernet port connection, choose a communication port and set other parameters as shown in Figure 8-2, and then click **OK**.

Figure 8-2 Adding multifunction cards

Add Multi-function Card		Х
Communication Port	USB@Port_#0003.Hub_#0001 ~	
Sending Card	1	
Ethernet Port	1	
Name		
ОК	Exit	

Figure 8-3 shows the user interface of an Ethernet port connection that is added successfully. The following procedure takes Ethernet port connection as an example to illustrate the function.

Multi-function Card Management				×
Add Remove Refresh Rename	Time of Pow	ement Monitoring Data I rer Management Board Thursday 15:25:58	Peripheral Device Load Prog	ram Audio Management Set Notes Start Delay
) 🔴 🔴	Automati	Refresh Software Control	Start All Emergency St.
	Switch 1	Start Stop]	
	Switch 2	Start Stop]	
	Switch 3	Start Stop]	
	Switch 4	Start Stop		
	Switch 5	Start Stop] ר	
	Switch 6 Switch 7	Start Stop]	
	Switch 8	Start Stop]	
			II the powers in multifunction c II the powers in multifunction c	
Read the status of all the powers in multifunc	tion card:Successful			

Figure 8-3 Ethernet port connection

- Step 4 Use any of the following functions as needed.
 - Power Management

Aulti-function Card Management				×
Add Remove Refresh Rename + - X 2 I I III IIII IIII IIIIIIIIIIIIIII	Power Manage	ment Monitoring Data	Peripheral Device Load Prog	gram Audio Management
Gending card-1 Gender Sending card-1 Gende		er Management Board — Fhursday 15:30:49	Read	Set Notes Start Delay
			Refresh	Start All Emergency St
	le Manual	🔘 Automati	🔘 Software Control	Advanced
	Switch 1	Start Stop		
	Switch 2	Start Stop		
	Switch 3	Start Stop		
	Switch 4	Start Stop		
	Switch 5	Start Stop		
	Switch 6	Start Stop		
	Switch 7	Start Stop		
	Switch 8	Start Stop		
	2019/12/515:30	1:15Start all powers of r	nultifunction card:Successful	
	2019/12/5 15:30	:16FuncCard_SetPow	erPortCtrlTotal:Successful	
ead emergency control status of power in multifu	Inction card:Succ	essful!		

- Read: Read the time from the multifunction card.
- Set: Set the multifunction card time to the PC time.
- Set Notes: Write notes for the power supplies.
- Start Delay: Set the delay time for powering on the multifunction card.
- Refresh: Read back the multifunction card information.
- Start All: Start all power supplies.
- Emergency Stop: Stop all power supplies. When the emergency stop operation is executed, automatic control is invalid.
- Manual: Start or stop the power supplies manually.
- Automatic Control: Set the auto start and stop time for the power supplies.
- Software Control: Set the power control schedule. Click Edit to customize the power control list. Click View Log to view the power control log.
- Advanced: Set the time for the automatic time synchronization between the multifunction card and PC.

Monitoring Data

Multi-function Card Management		×
Add Remove Refresh Rename →	Power Management Image: Constraint of the second secon	
	No monitoring card has been connected currently	
	Refresh	
	2019/12/5 15:34:32Read temperature of monitoring card in multifunction card:Successful 2019/12/5 15:34:32Read all status of monitoring card in multifunction card:Successful	2
Read all status of monitoring card in multifunctio		

View the monitoring data of both multifunction card itself and its connected monitoring card.

Peripheral Device

Add Remove Refresh Rename		itoring Data Peripheral Device Load Pr click 'Save' button a ation	
.\	Peripheral device 1	No external device \sim	
	Peripheral device 2	No external device 🗸 🗸	
	Peripheral device 3	No external device \sim	
N	Peripheral device 4	No external device \sim	
	Peripheral device 5	No external device \sim	
	Peripheral device 6	No external device \sim	
Þ,			Refresh

Add the peripheral devices connected to the multifunction card, including the light sensors and external 3D emitters.

Load Program

Multi-function Card Management X	l
Add Remove Refresh Rename Sending card-1 Power Management Monitoring Data Peripheral Device Load Program Audio Management Multi-function Card Information Model of Multi-function C FPGA Note of Multi-function Card Refresh	
Read all status of monitoring card in multifunction card;Successful!	1

Click Refresh to view the multifunction card model, FPGA version and FPGA note.

Type "admin" to access the the options for program loading.

- a. Select Load program for selected Multi-function Card or Load all programs for Multi-function Card.
- b. Click **Browse** to select the program package.
- c. Click **Change** to load the selected program.
- d. Click Exit to hide the program loading options.

Add Remove Refresh Rename	Power Management Monitoring Data Peripheral Device Load Program Audio Management Multi-function Card Information Model of Multi-function C FPGA Version: FPGA Version: FPGA Version: FPGA Note of Multi-function Card Refression Image: Data Program for selected Data Programs for Selected Exit Select Program Program Name Program Version Exit Program Version End Brows Chang

Audio Management



Multi-function Card Management		×
Add Remove Refresh Rename	Power Management Monitoring Data Peripheral Device Load Program After hardware replacement, please select audio channel of Multi-function Card connection	
	Audio channel of Multi-function Card connection	
	O Independent Channel Settings	
	HDMI Channel	
	2019/12/5 15:42:07Read system type of Multi-function Card connection:Successful	<u>}</u>
Read system type of Multi-function Card connecti	ion Successful	

Set the audio channel connected to the multifunction card, including the independent channel and HDMI channel.

8.2 Multiple-screen Management

Applications

Combine multiple screens into a combined screen, allowing for easier brightness adjustment, screen calibration and monitoring configuration, and higher working efficiency.

Applicable Products

All receiving cards and sending cards

Prerequisites

None

Related Information

The combined screen supports both auto and manual brightness adjustment.

Operating Procedure

- Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click OK. The default password is "admin".
- Step 2 Choose Settings > Multiple-screen Management.



Figure 8-4 Multi-screen management

Cc	onfiguration of Combined 9	Screen		_		×
	Number of Combined	1 🖨	Configuration	Clear		
				ок	Close	
				UN	Clust	

- Step 3 Set the number of combined screens and click Configuration.
- Step 4 Set the combined screen name and number of screens in the combined screen, and then click **Configuration**.

Figure 8-5 Configuration of combined screen

Configuration of Combined 9	creen		_		×
Number of Combined	1	Configuration	Clear		
Combined screen 1					
Name:	Combined screen 1				
Number of Screen:	2	Configuration	Reset		
Zoom:	<		0.2		
Size of Combined Scr	1280 x 480				
			ОК	Close	

Step 5 Right click the first screen to pop up the window as shown in Figure 8-6. Choose a communication port and its associated screen.

Figure 8-6 Associated screen

.g
Currently operating screen information
Comm USB@Port_#0001.Hub_#0001 ~
Screen list of designated
1
—
Associated Screen
Clear

- Step 6 Do the same for other screens of the combined screen.
- Step 7 Drag the screen to snap it to other screens.

Figure 8-7 Adjusting screen position

Configuration of Combined S	creen		-		×	
Number of Combined	1	Configuration	Clear			
Combined screen 1						
Name:	Combined screen 1			_		
Number of Screen:	2	Configuration	Reset			
Zoom:	<	>	0.96			
Size of Combined Scr	192 x 128					
001.Hub_#						
t_#0003.Hub_#		RS				
			ок	Close		

Step 8 After the settings are done, click **OK**.

8.3 Prestore Screen

Applications

Set the picture displayed on the screen during startup process, or displayed when the Ethernet cable is disconnected or there is no video signal.

Applicable Products

All receiving cards and sending cards

Prerequisites

A picture in BMP, JPG or PNG format is prepared.



Related Information

None

Operating Procedure

Step 1 On the menu bar, choose Settings > Prestore Screen.

Figure 8-8 Prestore picture settings

Prestore Picture	Settings	×
Communication	Port Selection	
Communic	USB@Port_#0003.Hub_#0	\sim
Screen1		
Prestore Pictur	e Settings	
Select Pi		Browse
Effect Settings		
💿 Screen E	ffect Center	~
🔿 Single C	abin Center	Test Effect
Extende	Save to HW	Check Stored Picture
Function Settin	gs	
Start-up Picture		
🔲 Enable	Time	30 🜩 Se
Disconnect Ca	ble	
🖲 Black	🔿 Last Frame	O Prestor
No DVI Signal •		
🖲 Black	🔘 Last Frame	O Prestor
	Send	Save to HW

- Step 2 Choose a communication port.
- Step 3 Set a prestore picture.
 - 1. Click Browse to select a picture.
 - 2. Set the screen display effect and click Test Effect to view the actual effect.
 - Screen Effect: The selected picture will be stretched, tiled or centered to fit the screen.
 - Single Cabinet Effect: The selected picture will be stretched, tiled or centered to fit each cabinet of the screen.
 - Select Extended Screen to display the picture on the extended screen.
 - 3. Click **Save to HW** to save the prestore picture to the hardware.
 - 4. Click Check Stored Picture to view the current prestore picture.
- Step 4 Set the picture displayed during startup process, or displayed when the Ethernet cable is disconnected or there is no video signal.
 - 1. Select **Enable** in the **Start-up Picture** area and set how long the prestore picture is displayed for during the startup process.
 - 2. Set whether the screen is black, or displays the last frame image or prestore picture when the Ethernet cable is disconnected.
 - Set whether the screen is black, or displays the last frame image or prestore picture when there is no video signal.
 - 4. After the settings are done, click **Send** to send the configuration information to the hardware.
 - 5. Click **Save to HW** to save the configuration information to the hardware.



8.4 Receiving Card Relay

Applications

Set the receiving card relay status to manually connect or disconnect the circuit or let the circuit automatically connect or disconnect, and reset the receiving card running time.

Applicable Products

- Setting the receiving card relay status: Applicable to the MRV350 receiving card
- Resetting the receiving card running time: Applicable to all receiving cards

Prerequisites

None

Related Information

When the relay is closed, the circuit is connected. When the relay is released, the circuit is disconnected. The running time is accumulated as the receiving card works, and will not be reset after the receiving card is powered off.

Operating Procedure

Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click Login.

The default password is "admin".

Step 2 Choose Settings > Receiving Card Relay.

Setting of Receiving Card Relay - 🗆 🗙
Serial Port Selection
Serial Port USB@Port_#0003.Hub_#0001
Screen1
Parameter of Receiving Card Relay
Disconnected
\sim
O Connected
Automatic
Temperature Under Automatic Mode
Temperature of Connected Relay 60 + c Disconnected Relay 30 + c
Connected Relay
Refresh
Receiving Card Timing Clearing
Depart Time 10Days Claure Minutes
Record Time 10Days 6Hours 5Minutes
Refresh

Step 3 Choose a communication port and perform the following operations as required.

- Set receiving card relay
 - Select Disconnected and click Send to disconnect the circuit.



- Select **Connected** and click **Send** to connect the circuit.
- Select **Automatic** and set the threshold temperatures for both connecting and disconnecting the relay, and then click **Send**.
- Reset receiving card running time

Click **Timing Resetting** to record the receiving card running time from 0.

8.5 Configuration Information Management

Applications

Import and export the NovaLCT configuration files for quick configuration in NovaLCT.

Applicable Products

N/A

Prerequisites

None

Related Information

None

Operating Procedure

Step 1 On the menu bar, choose Settings > Configure Information Management.

Figure 8-10 Configuration file management

Configuration File Management				
Import Configuration Export Configuration Cano	el			

- Step 2 Perform any of the following operations as required.
 - Import Configuration

Click Import Configuration, select a file in .zip format, and then click Open.

Export Configuration

Click Export Configuration, select the file save path and enter the file name, and then click Save.

8.6 Screen Control

Applications

Set the screen display status. Use the test pattern to perform the screen aging test and detect problems. Control the cabinet LCD backlight status.

Applicable Products

- Flipping: Applicable to the MCTRL660 PRO sending card
- Other functions: Applicable to all receiving cards and sending cards

Prerequisites

None



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Related Information

None

Operating Procedure

N N or choose **Tools** > **Screen Control** on the menu bar. Step 1 Click screen

Figure 8-11 Screen control Screen Control	×
USB@Port_#0003 Hub_#0001-Screen1	~
Display Control Black Out Freeze Normal	
Self-Test. Normal V	
Cabinet LCD Backlight Control	
	Close

- Step 2 Perform any of the following operations as required.
 - 4 Set screen display

Select Black Out, Freeze or Normal. When Freeze is selected, the screen always displays the current image.

4 Select test pattern

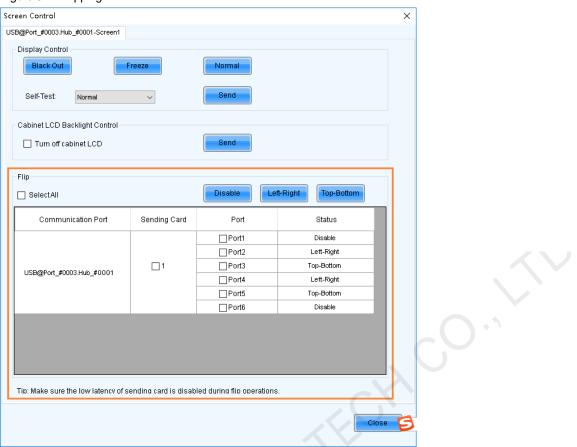
> Select a test pattern from the drop-down list and click Send. The receiving card will display the selected test pattern on the screen.

4 Set LCD backlight status

Select or deselect Turn off cabinet LCD and click Send.

Step 3 When the MCTRL660 PRO is connected, select a flipping option for the image of the Ethernet port as shown in Figure 8-12. The options include Disable, Left-Right, or Top-Bottom. If other devices are connected, skip this step.

Figure	8-12	Flipping
	• • -	



8.7 Controller Cabinet Configuration File Import

Applications

Save the receiving card configuration files to the sending card, so as to send the configuration files to the receiving card on site by using the configuration file import function of the sending card.

Applicable Products

- Importing cabinet configuration files: Applicable to the device-level sending cards
- Renaming device: Applicable to the NovaPro HD, VX2, VX4, VX4S, VX5s, VX6s, K4, K4S, K6s, VD43, VX2U, VX4U, K4U, K2U, VX2S, CVT4K-S, MCTRL4K, K16, H9, V1260, NovaPro UHD Jr, MCTRL1600, MCTRL R5, MCTRL660 PRO and E8000

Prerequisites

The receiving card configuration files in .rcfgx or .rcfg format are ready. The cabinet must be a regular cabinet, and cannot be in triple or quadruple strip output mode.

Related Information

None

Operating Procedure

Step 1 On the menu bar, choose Tools > Controller Cabinet Configuration File Import.



Figure	8-13 li	mportina	cabinet	configuration	files

×
/n

- Step 2 Choose a communication port.
- Step 3 Click Add Configuration File, select a configuration file, and click Open.

You can add configuration files for multiple receiving cards as needed. You can also delete and rename the configuration file.

Step 4 If you need to specify one or multiple sending cards, click **Advanced Configuration**. Select the desired sending cards in the displayed dialog box, and click **OK**. If you want to save the configuration files to all the connected sending cards, skip this step.

Figure 8-14 Advanced configuration

Advanced Configurati	×	
Sending card 1		
		S
		IR
OK		

- Step 5 After the settings are done, click **Save the Change to HW** to save the configuration files to the sending cards.
- Step 6 After the files are saved successfully, click **OK**.
- Step 7 If the renaming function is supported by device, you can rename the sending card as shown in Figure 8-15. If not supported, skip this step.

Figure	8-15	Renaming	sending	cards
i igaio	0.0	i tonianining	containing	ourao

i igulo o To Ronan	ing containg carao	
Import the Configuration	File of Controller Cabinet	×
Select Serial Port	USB@Port_#0002.Hub_#0001 ~	
Add Configuratio	Move Up Move Down Advanced C Delete Configur Save the Chang	
Sending Card Name S	etting	
Name		
▶1 NovaStar		
Rename	Save to HW	

- 1. Select Enable Naming.
- 2. Choose a sending card and click Rename.
- 3. Enter the new name that contains only letters, and click OK.
- 4. Click Save to HW.

8.8 Video Control

Applications

Select an input source type for the video controller, and set the input, output and stitching.

Applicable Products

The NovaPro HD video controller

Prerequisites

None

Related Information

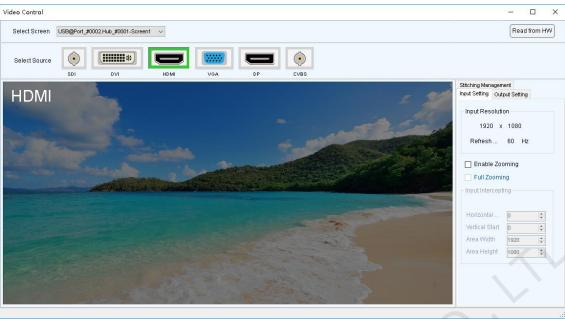
None

Operating Procedure

Step 1 On the menu bar, choose **Tools** > **Video Control**.



Figure 8-16 Video control



- Step 2 Choose a screen.
- Step 3 Click an icon to select an input source.
- Step 4 Perform any of the following operations as required to set the video control related parameters.
 - Set input and output
 - Disable zooming

You can set only the position of the output window.

Enable zooming

Select **Enable Zooming** to set the input intercepting position and size, as well as the output window position and size.

The output window size must be smaller than or equal to the LED screen size.

Full zooming

Select Enable Zooming and Full Zooming. Output parameter settings are not required.

The output image will be adjusted to the same size as the LED screen after this function is enabled.

- Set stitching
 - a. Select Enable Stitching to set the total number of pixels of the LED screen.
 - b. Set the position and size of the area loaded by current device, and then set the output window position and size. If you want to display the image in pixel-to-pixel mode, please click **Pixel-to-pixel Auto Set**.
 - c. Set the positions and sizes of the areas loaded by other devices, and then set the output window positions and sizes.

The total size of the areas loaded by all devices must be the same as the total pixel number of the screen.



Figure 8-17 Stitching management

o Control										-	
Select Screen	USB@Port_#	0002.Hub_#0001-Scree	en1 🗸							Read	rom HW
Select Source	٢					\bigcirc					
	SDI	DVI	HDMI	VGA	DP	CVBS					
IDMI		1						1 11	Input Setting Outp Stitching Manageme		
									🗹 Enable Sti	tching	
		-						1 and	Pixel-to-pixel.	Auto Set	
1	-		- inter			the and		- Lings	Total number	0 192	20 🜲
		ale ale		200	a the same			A State	Total number		0
		and the second second		And I al					Load area		
Constanting of		And Frank Line	A ST COM						Current De	1	~
					-				Horizontal	0	÷
									Vertical Start	0	-
							1		Area Width	1024	
		-							Area Height	768	\$

8.9 Module ID Settings

Applications

Set ID for the module containing a flash memory.

Applicable Products

The receiving cards that support module Flash or smart module

Prerequisites

The Flash arrangement is completed as described in 5.6 Setting Performance Parameters.

Related Information

Some modules do not support ID settings. For details, please contact NovaStar.

Operating Procedure

On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click Step 1 Login.

The default password is "admin".

- Step 2 Choose Tools > Module ID setting.
- Step 3 Click Refresh to view the module IDs.



Figure 8-18 Viewing module IDs

💀 Module ID settings		– 🗆 X	
USB@Port_#0003.Hub_#0001-Screen1			
Sending card1 Ethernet port1 Receiving card1 BUS:1 Flash No.:1 ID: 0-0	Sending card1 Ethernet port1 Receiving card2 BUS:1 Flash No.:1 ID: 1-0	Scaling rate	
		Refresh	

Step 4 Type "admin" to access the ID setting pane.

Figure 8-19 Setting module IDs

🛃 Module ID settings		– 🗆 ×
SB@Port_#0003.Hub_#0001-Screen1		
Module ID settings ISB@Port_#0003 Hub_#0001-Screen1 Sending card1 Ethernet port1 Receiving card1 BUS:1 Flash No.:1 ID: 0-0	Sending card1 Ethernet port1 Receiving card2 BUS:1 Flash No.:1 ID: 1-0	ID ID Setting Prefix Sort Type N O No.
		Refresh

- Step 5 Select the ID generation method. Click **Generate** to set IDs for all the modules, or double click a single module and set its ID in the displayed dialog box, and then click **OK**.
 - Prefix: Set the prefix of the module ID.



- Sort: Select the sorting type for the module IDs.
 - Type Z: Generate module IDs from left to right for all the rows from top to bottom. The ID format is "receiving card number-module number".
 - Type N: Generate module IDs from top to bottom for all the columns from left to right. The ID format is "receiving card number-module number".
 - No.: The ID format is "receiving card number-Flash number".
- By cabinet: Generate the IDs for all modules based on cabinets by Z type or N type, or number the modules by "sending card number-output port number-receiving card number-Flash number".

Step 6 After the settings are done, click Save to HW to save the configuration information to the hardware.

8.10 Sending Card Relay Settings

Applications

Set the status of the sending card relay to turn on or off the power of the receiving card.

Applicable Products

The KT8 sending card

Prerequisites

None

Related Information

When the relay is closed, the circuit is connected. When the relay is released, the circuit is disconnected.

Operating Procedure

Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click Login.

The default password is "admin".

Step 2 Choose Tools > More > Sending Card Relay.

Figure 8-20 Sending card relay

💀 Sending Card Relay Switch			×
Current Serial Port USB@Port_#0001.Hub_#0001 ~			
Sending Card List	Status	Operation	
Sending Card1	Disconnect	Start	

Step 3 Choose a communication port and a sending card.

Note: When the sending cards are cascaded, multiple sending cards are displayed in the list.

- Step 4 Check the relay status and perform the following operations as required.
 - Click Start to connect the circuit.
 - Click Stop to disconnect the circuit.



9 Screen Maintenance

9.1 Hardware Program Update

Applications

Update the hardware programs for the receiving cards and sending cards.

Applicable Products

All receiving cards and sending cards

Prerequisites

The program update package is obtained.

Related Information

None

Operating Procedure

Step 1 On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click Login.

The default password is "admin".

Step 2 Type "admin" to pop up the program loading window as shown in Figure 9-1.

Figure 9-1 Program loading

ogram loading —									
Select the commu	nication n	ort for onerati	on						
Communication p	ort 📄		on						
for the current ope)M3				 Devic 	eq 1		Reconnect
Program updating									
Program Pat	G:VDATA	A10s_V4.5.2.7							Browse
<u>Advanced</u>									Update
								_	
Extend the operation	on item —								
Read-back of recei									
irdware Program V	ersion Inf	ormation							
rdware Program V	ersion Inf	ormation						(
			÷ 0	utp 1	🔹 Recei.	1	Refres.	(Refresh
rdware Program V) Refres O Re			÷ 0	utp 1	Recei.	1	Refres.	(Refresh
			• 0	utp 1	Recei.	1 😫	Refres.	(Refresh
			÷ 0	utp 1	Recei.	1 🔮	Refres.	(Refresh
			₽ 01	utp 1	Recei.	1 😫	Refres.	(Refresh
			÷ 0	utp 1	Recei.	1 😫	Refres.	(Refresh
			(utp 1	Recei.	1	Refres.	(Refresh
			0	utp 1	Recei.	1 🛓	Refres.	(Refresh
			0	utp 1	🚖 Recei.	1 5	Refres.	(Refresh
			• O1	utp 1	Recei.	1 😫	Refres.		Refresh
			OI	utp 1	Recei.	1 🛃	Refres.	(Refresh
			÷ O	utp 1	€ Recei	1 🛓	Refres.	(Refresh
			÷ 01	utp 1	Recei.	1 🛓	Refres.	(Refresh
			0	utp 1	Recei.	1	Refres.	(Refresh
) Refres () Re			÷ 01	utp 1	Recei.	1 5	Refres.	(Refresh
			OI	utp 1	Recei.	1 5	Refres.	(Refresh
) Refres () Re			Dr	utp 1	Recei.	1 5	Refres.		Refresh
) Refres () Re			€ 0.	utp 1	Recei.	1 5	Refres.		Refresh
) Refres () Re				utp 1	Recei.	1 5	Refres.		Refresh
) Refres () Re				utp 1	Recei.	1 5	Refres.		Refresh



Step 3 Choose a communication port.

If you need to reconnect the sending card, click Reconnect.

Step 4 Specify the refreshing range, and click **Refresh** to view the current program version of the hardware.

- Refresh All: View the program versions of all sending cards and receiving cards.
- Refresh Specified: View the program versions of the specified sending cards and receiving cards.

If the module has an MCU, select Refresh Module MCU to view the MCU version.

Figure 9-2 Viewing program version

Program loadingthe current communication port has device accessed —	□ X]
Program loading		
Select the communication port for operation		
Communication port	connect	
for the current operati	connect	
Program updating		
Program Pat G:\DATA_A10s_V4.5.2.7	wse	
Advanced	date	
Extend the operation item		
Read-back of recei		1.1
Hardware Program Version Information		
🔿 Refres 🖲 Refres Sendi 1 💠 Outp 1 💠 Recei 1 🐳 🗌 Refres	efresh	
B-Hardware program version information		
- Sending Card		
H- V1.2.3.0 Total1 ,Remarks: 2018.07.03 V900 V1.2.3.0 STD		
- Receiving Card		
Receiving Card MCU		
⊕- V4.5.9.0 Total1,Remarks:2019.05.20 MRV316_MCU_V1.2.3.0		
- Receiving Card FPGA		
H- V4.5.9.0 Total1,Remarks:2018.10.15 MRV316_FPGA_V4.5.8.0		
Information Console		
2019/12/514:57:47Sending Card1 Read sending card program version Succeeded		
2019/12/514:57:47Sending Card1 Output port1 Receiving Card1 Read receiving card FPGA version Succeeded 2019/12/514:57:47Sending Card1 Output port1 Receiving Card1 Read receiving card MCU version Succeeded		
	Clear	

Step 5 Click Browse, select a program package, and click OK.

Step 6 Click Advanced, select the items to be updated, and click OK.

Figure 9-3 Advanced settings

Se	elect up	odating file			×	
		Select file	File type	File name	Version	
	•		MCU	A10s_MCU_V1.2.2.1_nda.dat	4.5.2.7	
		\checkmark	FPGA	A10s_FPGA_V4.5.2.5.dat	4.5.2.7	
		\checkmark	Font	FontLib.dat	4.5.2.7	
		\checkmark	Table	GammaTable.dat	4.5.2.7	
			ок	Cancel		

Step 7 Click Update.

Step 8 Choose to update the programs of all receiving cards or the specified receiving card, and then click **OK**.

Figure 9-4 Selecting send mode

🖳 Select a send mode	×							
All receiving cards								
O Specified receiving c	ard							
Sending card	1							
Ethernet port:	1							
Receiving card:	1							
ОК	Cancel							
Specified broadcast data ope	rating tips:							
Broadcast corrsponding value	es: sending card(256); Et 📀							

Step 9 After the programs are updated successfully, click OK.

- Step 10 If the receiving card supports program readback, perform the following operations to save the receiving card program to your local drive; otherwise, skip this step.
 - 1. Click Read-back of receiving card program.
 - 2. Specify the receiving card, and click **OK**.

🖳 Select receive card	_		×	
Sending card	1	÷		
Ethernet port:	1	¢		
Receiving card:	1	÷		
ОК	C	ancel		

- 3. Select the file save path, and click OK.
- 4. After the settings are done, click **OK**.

9.2 Led Error Detection

Applications

Detect the damaged LED lights and locate them on the screen.

Applicable Products

- Use monitoring card for Led error detection: Applicable to the MRV320 receiving cards
- Use smart module for Led error detection: Applicable to the A4, A4s, A5, A5s, A7, A7s, A8, A8s, A9s, A10s Plus, XC200, XC100 and B4s receiving cards. The smart module Led error detection function is a customized function of the receiving cards.

Prerequisites

- The module driver chip must be MBI5037, MBI5036, MBI5030, DM13H, P2518, RFI3630, MBI5034, MBI5040, MBI5051, MBI5052, MBI5053, MBI5045, MBI5039 or MBI5152.
- If you want to use the Led error detection function of the monitoring card, the module driver chip must support 1/16 scan or below, and the MON300 monitoring card is required between the connection of module and the MRV320.



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Related Information

None

Operating Procedure

Step 1 On the menu bar, choose **Tools** > Led Error Detection.

Figure 9-5 Led error detection

Led Error Detection							×	
Communication Port Sel	ection						64 T C C T A2	
Communication Port	192.168.0.10:5200	~						
Screen1								
Screen Topological Dia	gram							
					Zoo	om		
					~			
						1.0		
						1.0		
						Unknow	m	
						Error		
						Normal		
						No Moni	ito	
					2.55			
Led Error Detection Par	ameters							
Detection Type			S					
		nd Short Circuit Detecti		~				
Threshold Voltage	1	O 2	О з	○ 4				
Current Gain	🗹 Enable	Change Setting						
Bi-Color LED Error	Enable							
		Save Con	fi	Led error d	Pause	Stop		
		e				¢		
							×	
				\bigcirc				
Information								

- Step 2 Choose a communication port.
- Step 3 Set Led error detection parameters.
 - Detection Type: The detection types supported by the driver chip
 - Threshold Voltage: The threshold voltage of the driver chip, which can be set based on the information provided by the screen manufacturer
 - Current Gain: Select whether to enable the current gain function. Click **Change Setting** to adjust the current gain.
 - Si-Color LED Error: Select whether to detect only the red and green LED lights.
- Step 4 Click **Conduct led error detection for full screen**, or select a cabinet on the screen topological diagram and click **Led error detection selection**.
- Step 5 After the detection is done, click OK.



						×	
ommunication Port Sele	ction					64 F () () () ()	
ommunication Port	192.168.0.10:5200	\sim					
creen1							
Screen Topological Diag	ram						
24582					Zoom 1.0		
					Unknov Error Normal No Mon		
Led Error Detection Para Detection Type			6				
	survey and the second	d Short Circuit Detecti		④ 4			
Threshold Voltage	O 1	O 2	○ 3	• 4			
Current Gain	🗹 Enable	Change Setting					
	Enable						
Bi-Color LED Error							
Bi-Color LED Error		Save Cor	nfi Conduct led.	Led error d	ause Stop		
				Led error d			
019-11-08 05:16:03Scr		ction is being initialize	d, please wait				
019-11-08 05:16:03Scr		ction is being initialize	d, please wait	Led error d) P			

The number displayed on the topological diagram indicates the number of the faulty LED lights. Hover the mouse over the topological diagram to view the detailed Led error detection information.

Step 6 Double click a cabinet in the topological diagram to access the interface shown in Figure 9-7.



Figure 9-7 Result of the Led error detection for all the modules

Step 7 Select a red module, and select Red A, Green, Blue or Red B (virtual red) on the right to view the faulty LED lights which are shown in black.

9.3 Reset Run Time

Applications

Reset the receiving card run time displayed on each cabinet LCD.



Applicable Products

All receiving cards

Prerequisites

None

Related Information

The run time is stored in the receiving card and displayed on the cabinet LCD.

×

Operating Procedure

Step 1 On the menu bar, choose Tools > More > Reset Run Time.

Figure 9-8 Resetting run time

Reset Run Time	
Current Communic USB@Port_#0003.H ~ Soreen List: screen1	Cabinet Run Time on LCD Cabinet Run Time on LCD: 10 day 6 hour 43 minut Reset

Step 2 Choose a communication port and a screen.

Step 3 Click Reset.

9.4 Bit Error Detection

Applications

Test whether the communication of the receiving card Ethernet port is normal.

Applicable Products

All receiving cards

Prerequisites

None

Related Information

None

Operating Procedure

- Step 1 On the menu bar, choose **Tools** > **More** > **Bit Error Detection.**
- Step 2 Click Manually as shown in Figure 9-9.



Figure	9-9	Bit	error	detection
iguio	00	2.0	01101	actoolion

Bit Error Detection						-	□ ×
Device - All - USB@Port_#0003. Hub_# - Sending card1	Auto Re:	fresh 1 🔹 Min Manually	,				lear
Sending Cardi	Status	Sending card	Ethernet Port	Receiving Card	Error Details	Locate	Clear Errors
		VSB@Port_#0003.Hub_#0001-Sending cord1	Port1	Receiving cord1	<u>Errors:0 2019年12月4日 17:00:02</u>	Locate	Clear
		Normal 🔴	Error detec	ted	🔷 Data reading 🔊 Detec	tion not	
< >		•			•		

- Step 3 If the communication is abnormal, perform any of the following operations as required. If the communication is normal, skip this step.
 - View error details

Click the link in the Error Details column and view the detailed error information in the displayed dialog box.

Locate display area

Click Locate to view the display area on the screen.

Clear errors

Click Clear Errors to reset the error quantity to 0.

Step 4 (Optional) Select Auto Refresh and set the refreshing period.

9.5 Viewing Hardware Information

Applications

Set the current time of the hardware, and view the sending card SNs and hardware program version information.

Applicable Products

All receiving cards and sending cards

Prerequisites

None

Related Information

Currently only hour, minute and second can be set, but the date cannot be set.

Operating Procedure

Step 1 On the menu bar, choose Settings > Hardware Information.



Figure 9-10 Hardware information

Hardware Information				- 🗆	×	
Time						
Current Time of Hardwa	re 12/04/2019 17:02:42	Read	Set			
Select the Communication	Port					
Current Operation C	USB@Port_#0003.Hub_#0001			~		
SN Number of Sending Ca	rd					
Serial Number	SN Number					
	1205-1C00-8002-0000 (18-	5 30 0 640\				
				Reread		
Hardware Program Versio	n Information					
Refres O Refres	Sendi 1 🖨 Outp	1 🖨 Recei 1	😫 🗌 Refres	Re	fresh	
						· · ·
Information Console						
					Clear	

Step 2 Choose a communication port.

After a communication port is selected, the current hardware time will be refreshed automatically. You can also click **Read** to manually update the hardware time.

- Step 3 If you want to set the current time of the sending card to that of the computer, click Set; otherwise, skip this step.
- Step 4 Click **Reread** to view the sending card SNs.
- Step 5 Specify the refreshing range, and click **Refresh** to view the current program version of the hardware.
 - Refresh All: View the program versions of all sending cards and receiving cards.
 - Refresh Specified: View the program versions of the specified sending cards and receiving cards.

If the module has an MCU, select Refresh Module MCU to view the MCU version.

Figure 9-11 Viewing program version

Hardware Information			-		×
Time					
Current Time of Hardware	12/04/2019 17:02:42	Read	Set		
-Select the Communication Pol	rt				
Current Operation C U	SB@Port_#0003.Hub_#0001			\sim	
Content Operation C	55(@) 011_#00003.105_#0001			*	
- SN Number of Sending Card					
Serial Number	SN Number				
▶ 1	1205-1000-8002-0000 (18-5	-28-0-640)			
			R	eread	
				cicau	
-Hardware Program Version Inf	formation				
- Haluwale Flogialit version in	ormation				
🖲 Refres 🔘 Refres	Sendi 1 🖨 Outp 1	🛊 Recei 1 📫	📃 Refres	Refresh	
Hardware program version	information				^
Sending Card					
Sending Card MCU					
	Remarks:2019.07.04 MCTRL4K V1.2	.4.0 STD			
Sending Card FPGA					
iter v1.2.4.0 Total1	Remarks:2019.07.04 MCTRL4K V1.2	.4.0 STD			· ·
Receiving Card					¥
Information Console					
2019/12/4 17:04:57Sending Ca	ard1 Read sending card program vers ard1 Output port1 Receiving Card1 Re ard1 Output port1 Receiving Card1 Re	ead receiving card FPGA version Su		Clear	



10 Plug-in

10.1 Test Tool

Applications

Use the test patterns to check whether the screen can display the image normally and locate the problems.

Applicable Products

All receiving cards and sending cards

Prerequisites

When the display window is large, it is recommended you use an extended display to display the test pattern for easier operation of the software.

Related Information

None

Operating Procedure



- Step 1 Click Test Tool or choose Plug-in > Test Tool on the menu bar.
- Step 2 Click the **Window** tab to set the test pattern size according to the screen size, as well as set the test pattern position and set to show or hide the test pattern as shown in Table 10-1.

When the test pattern needs to be displayed on the extended display, adjust the **X** and **Y** values to ove the test pattern to the extended display.

Figure 10-1 Setting window parameters

•		•	•						
述 Test	Tool of LED	Screen-Novast	ar					- 🗆	\times
Window	Pure Color	Gradual Change	e Grid	Orientation	Help				
х	<		>	50 🚖	Wi dth	<		> 805	:
				h .				-	
¥	<		>	ļ1 ≑	Height	<		> 508	-
							Show	Hide	

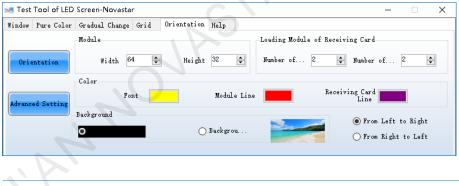
Step 3 Select the Pure Color, Gradual Change, Grid or Orientation tab to set the test pattern style.

Tab Name	Function Description
	Set a pure color test pattern.
	• Select a color.
Pure Color	 Set the grayscale changing method.
	The grayscale changing options include Manual and Automatic . When Automatic is selected, you can set the changing speed, as well as set to start or pause the changing.
	Set a gradient test pattern.
Credual Charge	• Select a color.
Gradual Change	Select a grayscale level.
	Set the test pattern stretching times.



Tab Name	Function Description
	Set the gradient moving style.
	 Set the gradient sequencing and direction.
	You can start or stop the moving of the gradient.
	Set a test pattern that has lines.
	• Select a color.
	• Set the line style.
	Set the grayscale level.
Grid	Set the line moving speed.
	Select Grid Overlaying and select another pattern to display the overlaying grid effect. Click Advanced Setting to set the background color, line width and spacing, and the test patterns that can be used in blending measurement.
	Click Ageing and the screen displays the pure red, green, blue and white in sequence, which is mainly used by the screen manufacturer.
	Set the test patterns displayed in the actual positions of the receiving cards and modules. The receiving card serial numbers, receiving card lines and module lines are displayed, which can be used to locate the specific receiving cards or modules.
	Set the module width and height.
	Set the module columns and rows in the receiving card.
	• Set the colors for the receiving card serial numbers, module lines and receiving card lines.
Orientation	Set the background color or background image.
	• Set the receiving card numbering direction. The options include From Left to Right and From Right to Left .
	If the test pattern is not displayed, click the Orientation button to display it.
	Click Advanced Setting to set the font size and font type for the receiving card serial number, starting row number, starting column number, as well as the widths of the module and rececving card lines.

Figure 10-2 Setting orientation parameters



Note

Click the **Help** tab to view the descriptions of the shortcut keys used in **Test Tool**.

10.2 Calculator

Applications

Open the Windows calculator for users to do the necessary calculations.

Applicable Products

N/A

Prerequisites

None www.novastar.tech



Related Information

None

Operating Procedure

On the menu bar, choose Plug-in > Calculator to open the Windows calculator.

10.3 External Program

Applications

Add the shortcut icons for the commonly-used programs to NovaLCT user interface.

Applicable Products

N/A

Prerequisites

None

Related Information

None

Operating Procedure

Step 1 On the menu bar, choose Plug-in > External Program.

Figure 10-3 External program

External	Program		 x
Common			
	2		
	×	OK	Cancel

Step 2 Click

Figure 10-4 Adding external programs

Add External Program	x
Program P	J
Command	
OK	

Step 3 Select the program path and enter the command line parameter as required, and then click OK.



If the external program is successfully added, the shortcut icon of the program will be displayed in Figure 10-3.

Note

Select an external program icon and click 🐱 to remove the program.

Step 4 Click OK.

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11 Software Settings

11.1 Setting Main Window Starting Position

Applications

Set the coordinates of the top-left corner of the main window of NovaLCT on the desktop, and make the window display in the specified position when the software is started.

Applicable Products

N/A

Prerequisites

None

Related Information

None

Operating Procedure

Step 1 On the menu bar, choose Settings > The Main Window Starting Position.

Figure 11-1 Setting starting position coordinates

Starting Position Set	tting	×
X Coordinates	780	÷
Y Coordinates	56	e C
ок	Cance	

Step 2 Set the coordinates of the top-left corner of the main window on the desktop, and click OK.

After the settings are done, the main window moves to the specified position. When next time NovaLCT is started, the main window will be displayed in the target position.

11.2 Changing UI Language

Applications

Change the UI language for NovaLCT.

Applicable Products

N/A

Prerequisites

None



Related Information

NovaLCT supports Deutsch, English, Spanish, French, Japanese, Korean, Portuguese, Russian, Thai language, Traditional Chinese and Simplified Chinese.

Operating Procedure

On the menu bar, choose Language and select the target language from the sub-menu.

11.3 Viewing Help Documents and Updating Program Online

Applications

View the user manuals, update log and software information of the current version of NovaLCT, and perform online update for NovaLCT.

Applicable Products

N/A

Prerequisites

None

Related Information

The user manuals include NovaLCT LED Configuration Tool for Synchronous Control System User Manual and NovaLCT LED Configuration Tool for Multimedia Player User Manual.

When NovaLCT is started, an **Online Update** dialog box will pop up if the software is not the latest version. Click **Update** to update the software. If you want to update the program later, follow the subsequent operating procedure to perform online update.

Operating Procedure

- Step 1 On the menu bar, choose Help.
- Step 2 Perform the following operations as required.
 - View User Manuals

Choose User Documents and select the desired user manual.

View Update Log

Choose Update Log to view the update log in the displayed dialog box.

View Software Information

Choose **About** to view the software version and copyright information in the displayed dialog box. If needed, click the link to visit the official website of NovaStar.

Update NovaLCT

Choose **Online Update** to check whether a software update is available in the displayed dialog box. If there is a software update, click **Update**.



12 Troubleshooting

12.1 Failed to install NovaLCT of earlier versions

Problem

The installation of NovaLCT fails when the version to be installed is earlier than the current version.

Solution

Uninstall the current version, and then install the earlier one.

12.2 "No Screen" displayed in NovaLCT

Problem

"No Screen" is displayed in NovaLCT as shown in Figure 12-1.



Solution

- If the LED screen has been configured already, click screen Configuration and select the Screen Connection tab, and then click Read from HW to read the configurations from the LED screen.
- If the screen has not been configured yet, configure it first.

12.3 Permission error

Problem

After NovaLCT is installed on the system disk of the computer that runs Windows 8 or later version, some functions in NovaLCT cannot work normally.

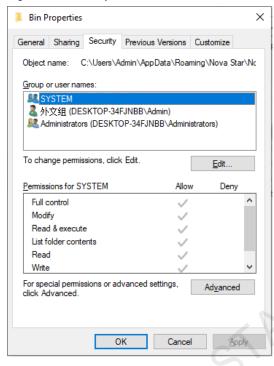


Solution

Here, we use Windows 10 as an example to illustrate how to solve this problem.

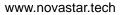
- Step 1 Right click the desktop shortcut of NovaLCT and select **Open file location**.
- Step 2 Go back to the upper level of current file directory, that is, "\Nova Star\NovaLCT".
- Step 3 Right click the **Bin** folder and select **Properties**.
- Step 4 Select the **Security** tab.

Figure 12-2 Security



- Step 5 Check whether there is current user or Everyone in the Group or user names area.
 - Yes: Go to Step 11.
 - No: Go to Step 6.

Step 6 Click Edit to open the dialog box shown in Figure 12-3.



PAGE 123

Figure 12-3 Changing permissions

		×
Security		
Object name: C:\Users\Admin\/	AppData\Roaming	g\Nova Star\Nc
<u>G</u> roup or user names:		
¥¥ SYSTEM る外文组(DESKTOP-34FJNBB 終 Administrators(DESKTOP-34		tors)
	A <u>d</u> d	<u>R</u> emove
Permissions for SYSTEM	A <u>d</u> d Allow	<u>R</u> emove Deny
Permissions for SYSTEM	_	_
	_	_ Deny
Full control	_	_ Deny
 Full control Modify	_	_ Deny
Full control Modify Read & execute	_	_ Deny
Full control Modify Read & execute List folder contents	_	

Step 7 Click Add to open the dialog box shown in Figure 12-4.

Full control		^	
Modify	\checkmark		
Read & execute			
List folder contents			
Read		v	
ОК	Cancel <u>Apply</u>	r	
Click Add to open the dialog	box shown in Fig	jure 12-4.	
Figure 12 4 Selecting uppers of	r aroupo		
Figure 12-4 Selecting users of	rgroups		
		X	
Select Users or Groups		~	
		^	
Select Users or Groups Select this object type:			
	pals	Qbject Types	
Select this object type:	pals		
Select this object type: Users, Groups, or Built-in security princip	pals	Object Types	
Select this object type: Users, Groups, or Built-in security princip From this location: DESKTOP-34FJNBB			
Select this object type: Users, Groups, or Built-in security princip From this location:		Object Types	
Select this object type: Users, Groups, or Built-in security princip From this location: DESKTOP-34FJNBB		Object Types	
Select this object type: Users, Groups, or Built-in security princip From this location: DESKTOP-34FJNBB		Object Types	
Select this object type: Users, Groups, or Built-in security princip From this location: DESKTOP-34FJNBB		Object Types	
Select this object type: Users, Groups, or Built-in security princip From this location: DESKTOP-34FJNBB	<u>les):</u>	Object Types	

Step 8 Click Advanced to open the dialog box shown in Figure 12-5, and click Find Now.

Figure 12-5 Advanced settings

-	-		
Select Users or Groups	5		×
Select this object type:			
Users, Groups, or Built-	in security principals		Object Types
From this location:			
DESKTOP-34FJNBB			Locations
Common Queries			
N <u>a</u> me: Starts	with \sim		<u>C</u> olumns
Description: Starts	with \sim		Find <u>N</u> ow
Disa <u>b</u> led account	ts		Stop
Non expiring pass	sword		
Days since last logo	n: 🗸 🗸		,
Search res <u>u</u> lts:		(OK Cancel
Name	In Folder		^
Access Control Assi			
Administrator	DESKTOP-34FJ DESKTOP-34FJ		
Administrator	DESKTOP-34FJ		
ALL APPLICATION			
ANONYMOUS LO	•		
Authenticated Users			
Authentication auth			
Backup Operators	DESKTOP-34FJ		
BATCH			~

- Step 9 Select current user or Everyone in the search result, and click OK.
- Step 10 Click OK.
- Step 11 Select all for the Allow column and click OK.

Figure 12-6 Setting permissions

Permissions for Bin		$\langle \cdot \rangle$
Security		
Object name: C:\Users\Admin\	App Data \Roaming	Nova Star\Nc
Group or user names:		
Everyone		
SYSTEM		
▲ 外文组 (DESKTOP-34FJNBE 经 Administrators (DESKTOP-34		tem)
Administrators (DESKTOP-34	FJINBB (Administra	tors)
	A <u>d</u> d	<u>R</u> emove
Permissions for Everyone	Allow	Deny
Full control	\checkmark	□ ^
Modify	\checkmark	
Read & execute	∇	
List folder contents		
Read	\checkmark	
ОК	Cancel	Apply

Step 12 Click **OK** and close the properties dialog box.

12.4 Failed to connect colorimeter

Problem

The colorimeter connection fails when the colorimeter is used to automatically measure the original color space of the screen.

Solution

Step 1 Check whether the hardware connection of the colorimeter is normal.

When the colorimeter model is CS-100A, follow the subsequent descriptions to make sure the colorimeter auto mode is turned on.

Turning on auto mode: Set switch to ON while pressing the F button. When you see a C letter on the LCD, the auto mode is turned on, which is shown in Figure 12-7.

Figure 12-7 Setting CS-100A colorimeter



- Normal: Go to Step 2.
- Abnormal: Reconnect the colorimeter and make sure the colorimeter can work normally.
- Step 2 Check whether the colorimeter model selected in NovaLCT is correct.
 - Correct: Go to Step 3.
 - Incorrect: Select the correct model.

Step 3 In NovaLCT, click Connect to reconnect the colorimeter.

13 FAQs

13.1 How do I set the required parameters in no sending card mode?

Question

The receiving card supports no sending card mode. When the hardware connection with no sending card is completed, how to set the required parameters?

Figure 13-1 No sending card mode



<u>Answer</u>

- Step 1 Make sure the network card allows a data transmission rate of 1000 Mbps.
- Step 2 On the taskbar, right click was and choose **Detect Config**.
- Step 3 Select Enable virtual controller and click OK.



💀 Detect Config	-	
Auto Detect Config ☑ Auto detect c	ontroller	
Detect Interval Conf	ïg	
Detect interval:	30	븆 S
Virtual Controller C ✓ Enable virtua		
OK		r
5		4

- Step 4 On the taskbar, right click Market and choose Select Network Card.
- Step 5 Choose a network card and click **OK**.



Figure 13-3 Choosing network card



13.2 How do I set the proxy when NovaLCT needs to access WAN network?

Setting.

Question

When NovaLCT in LAN network needs to access WAN network, how to set the proxy?

<u>Answer</u>

Step 1	On the taskbar, right click	< 🔤 and choose System
	Figure 13-4 Setting proxy	
	System Setting	×
	🗌 Enable Proxy	Test Proxy
	Proxy Address	
	Proxy Port 0	
	Setting	Close

- Step 2 Select Enable Proxy.
- Step 3 Enter the proxy address and port.
- Step 4 Click Test Proxy.
- Step 5 After the test succeeds, click Setting.

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