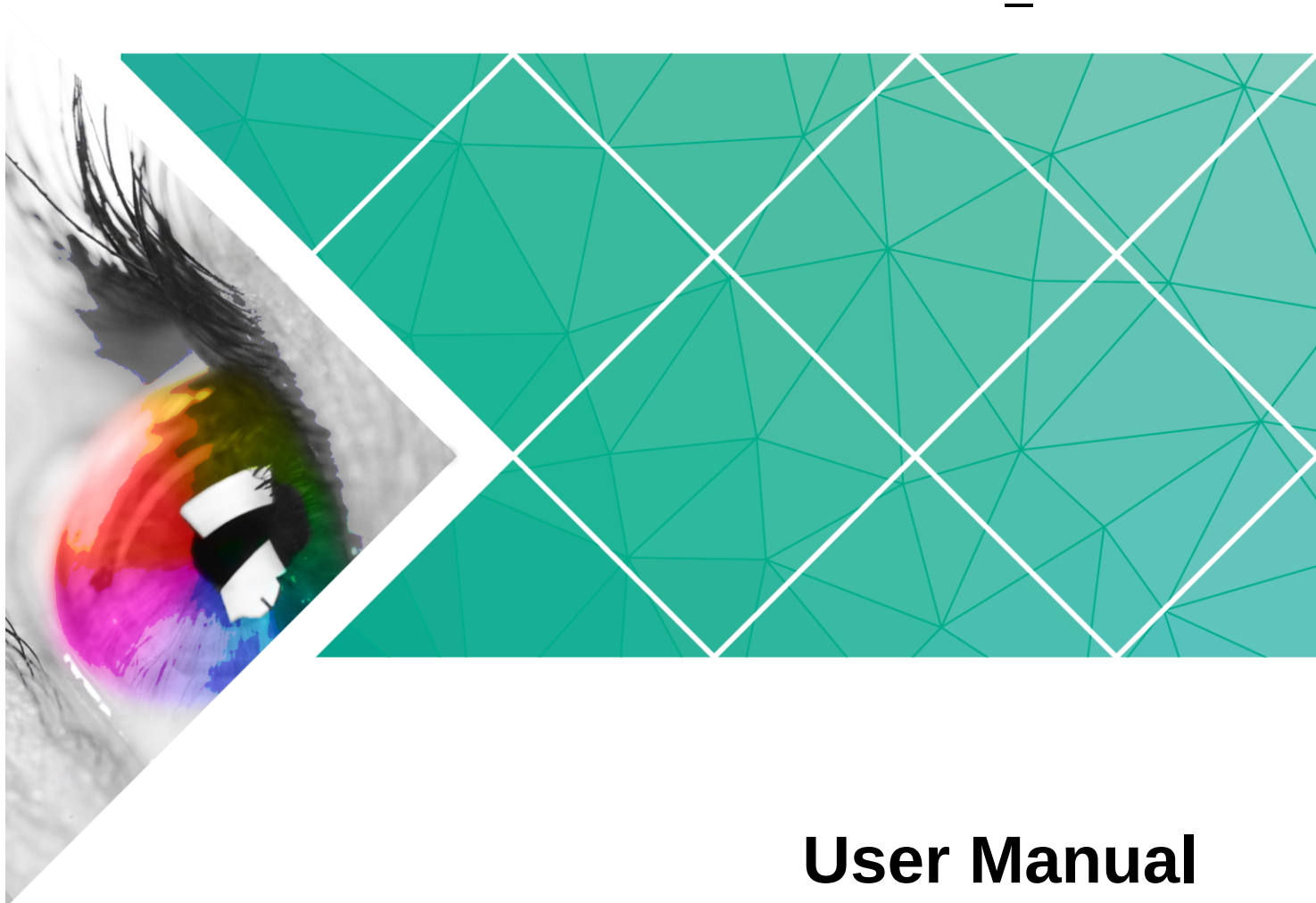




LED Display Controller

Thunderview_S1



User Manual

Product Version: V1.0.1

Document Number: NS110100640

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Change History

Version	Release Date	Description
V1.0.1	2018-08-23	Changed pictures in the document.
V1.0.0	2017-11-20	First release

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1 Safety Instructions

To prevent potential danger, please use this device according to the following rules. In case of any damage, please contact NovaStar after-sales department for maintenance, rather than have the device disassembled and maintained by non-professionals.

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

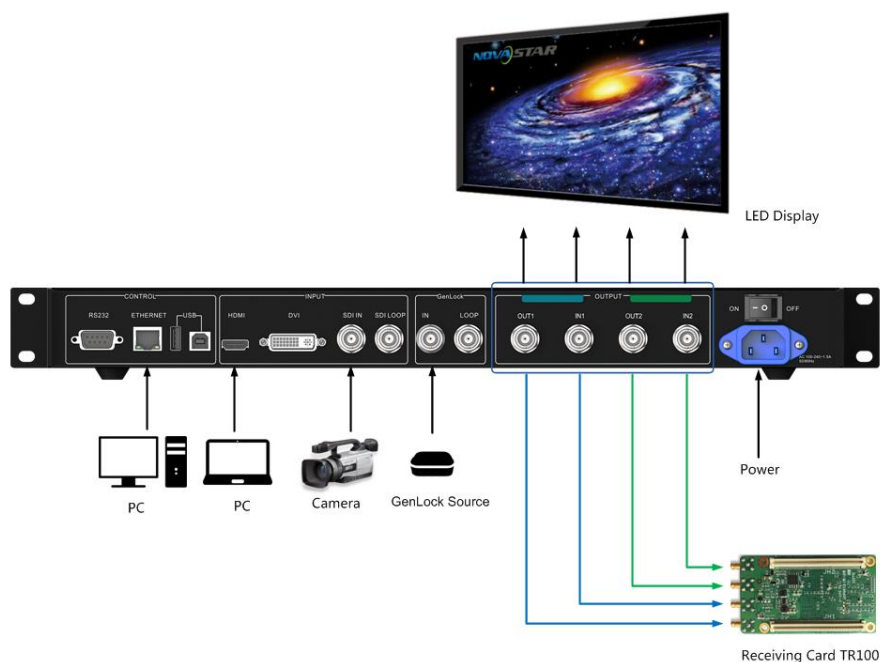
2 Overview

The S1 is NovaStar's new generation of Thunderview series display controller especially designed for high-end display applications. With multiple I/O connectors and control connectors, it is ideal for different applications, such as broadcasting and television, indoor high-end screens with fine pitch, rental for stage, security monitoring, etc.

The S1 has 3G data transmission bandwidth. A single coaxial connector can support up to 1920x1080@60Hz and the device supports up to 3840x1080@60Hz. Benefiting from the SerDes technology, the S1 can realize zero-frame latency.

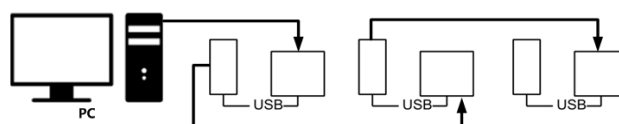
Connection of hardware devices to the S1 is shown in the figure below. The device must be powered off before connection.

Figure 2-1 Hardware device connection



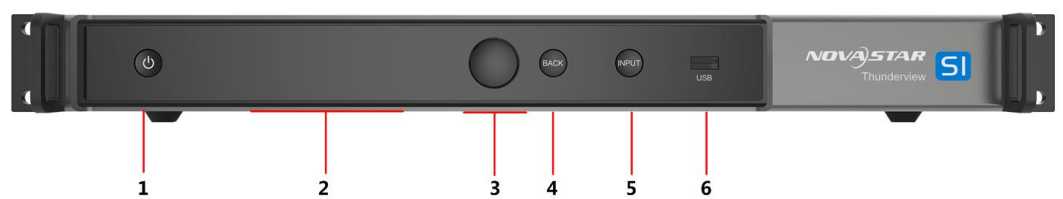
To control multiple S1 units, cascade them according to the figure below.

Figure 2-2 Cascade



3 Appearance

3.1 Front Panel



No.	Description
①	Power button
②	INPUT : Switches video sources.
③	OLED operation screen
④	Knob: Pressing the knob enters a menu or confirms an option or operation. Rotating the knob selects a menu item or adjusts a parameter.
⑤	BACK : Pressing the button exits the current menu or operation.
⑥	USB port: Connects to a USB drive to update firmware.

3.2 Rear Panel



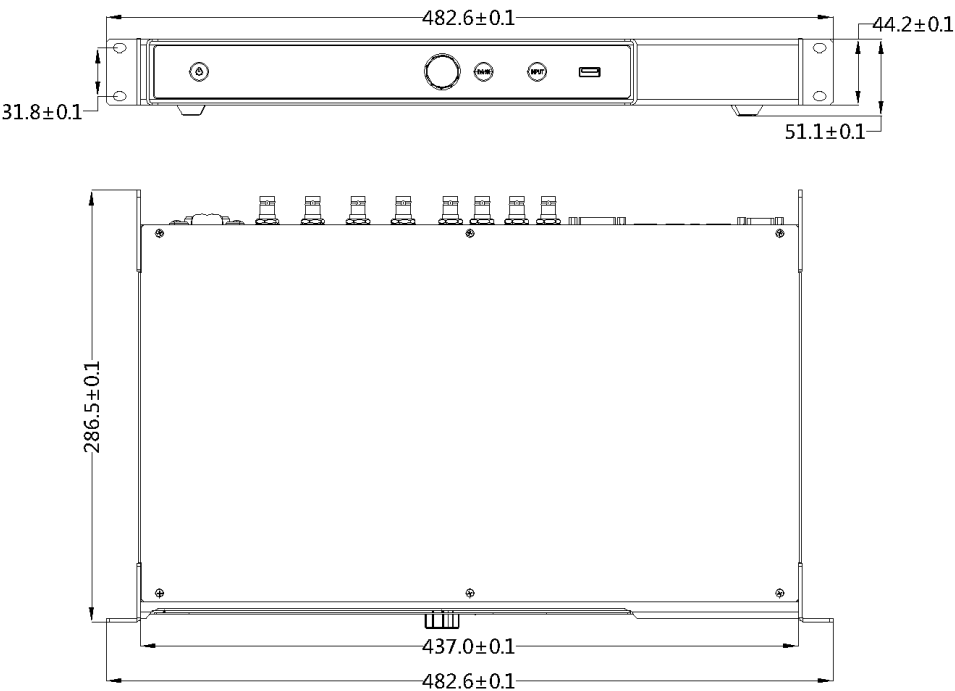
Inputs	HDMI	• Standard HDMI 1.4a input • Supports 8-bit/12-bit. For 8-bit, supports RGB 4:4:4 1080P. For 12-bit, supports YCbCr 4:2:2 1080P.
	DVI	• Single-link DVI • Users can customize the resolution. Maximum horizontal resolution: 3840 pixels Maximum vertical resolution: 3840

		pixels
	SDI IN	Supports 3G-SDI progressive input in standard format.
	SDI LOOP	SDI loop out
Outputs	OUT1, IN1 OUT2, IN2	• OUT1, IN1, OUT2 and IN2 are coaxial output connectors. • OUT1 and IN1 are used in pairs. OUT2 and IN2 are used in pairs. • Supported bandwidth of each channel is up to 3G. • Loading capacity of each channel is up to 1920x1080@60HZ. • Maximum transmission distance of the coaxial cable is 100m.
GenLock	In	It is the GenLock synchronization signal, which is used to ensure synchronization between the LED screen display and external GenLock source.
	Loop	GenLock loop out
Control	RS232	Baud rate: 115200 Bps
	ETHERNET	RJ45 (TCP/IP) control connector
	USB (Type-A)	Control connector that connects to the upper computer
	USB (Type-B)	Cascade connector
Power	100–240VAC@50/60Hz	AC power input
Switch	ON/OFF	

Note:

The type-A USB port is prohibited from being connected to the upper computer directly.

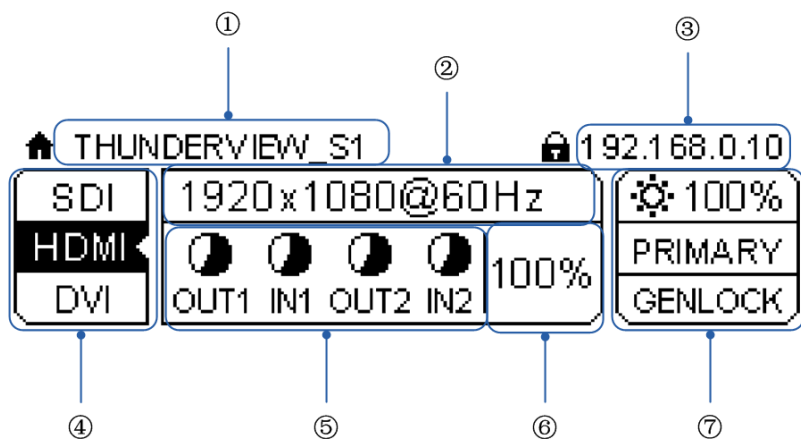
4 Dimensions



Unit: mm

5 Home Screen

The home screen of the S1 controller after it is powered on is shown in the figure below.



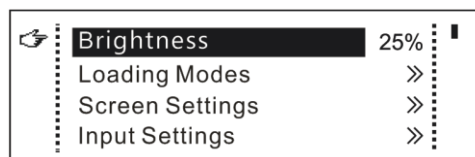
No.	Description
①	Product name
②	The currently selected input source and its resolution and frame rate Supported statuses: BLACK OUT , FREEZE , NO SIGNAL and TEST PATTERN
③	IP address
④	Types of input video sources supported by the S1: SDI, HDMI and DVI Displays the connection status of video sources. As shown in the figure above, the HDMI is selected, which means the HDMI-type input source is operating.
⑤	Loading capacity status of outputs
⑥	Loading capacity status of the device
⑦	Screen brightness
	PRIMARY (primary device)/ BACKUP (backup device)
	Statuses of control connector: GenLock .

6 Operations

Before operation, ensure the LED screen is powered on and displays normally. Then, press the knob to enter the operation menu screen and the following operations can be performed.

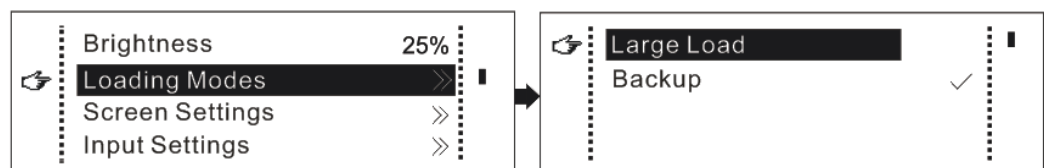
Note: Pressing the knob enters a menu or confirms an option or operation. Rotating the knob selects a menu item or adjusts a parameter.

6.1 Brightness



Choose **Brightness** and press the knob. Then, rotate the knob to adjust the brightness value.

6.2 Loading Modes



Large Load Mode

When the **Large Load** mode is selected, the Output 1 (OUT1 and IN1) and Output 2 (OUT2 and IN2) can be used together at the same time. The loading capacity of each channel is up to 1920x1080@60HZ and the loading capacity of the device is up to 3840x1080@60Hz.

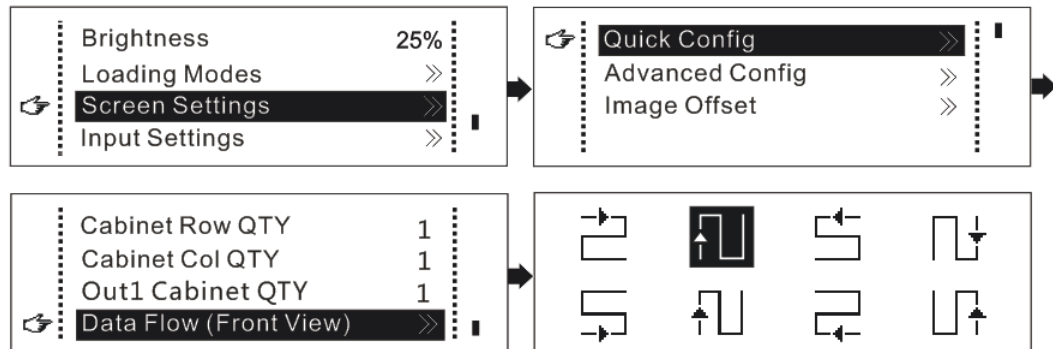
Backup Mode

When the **Backup** mode is selected, the Output 1 (OUT1 and IN1) is used as the primary output connector and the Output 2 (OUT2 and IN2) is used as the backup output connector.

OUT1 and IN1 (OUT2 and IN2) are used in pairs. When the Output 1 (OUT1 and IN1) fails, the Output 2 (OUT2 and IN2) will take over the work of the Output 1 to ensure normal output display.

6.3 Screen Settings

6.3.1 Quick Configuration



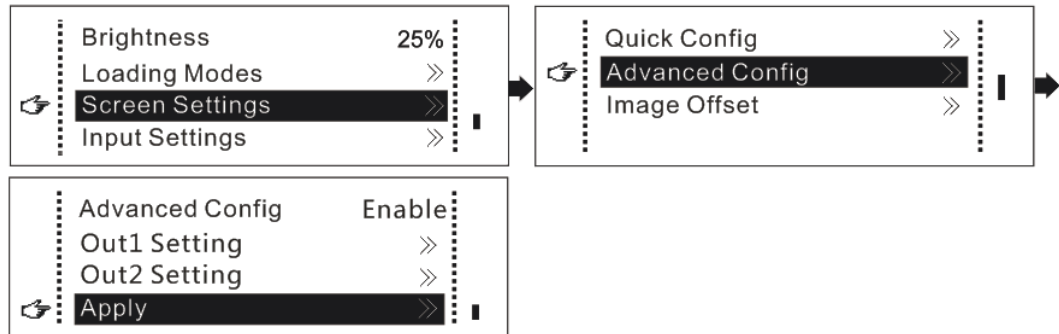
- Step 1 Check to ensure the LED screen is powered on and displays normally.
- Step 2 Press the knob to enter the operation menu screen.
- Step 3 Choose **Screen Settings** > **Quick Config** to enter the submenu of **Quick Config**.
- Step 4 Set **Cabinet Row QTY** and **Cabinet Col QTY** (number of cabinet rows and columns) based on actual conditions.
- Step 5 Set **Out1 Cabinet QTY** (number of cabinets loaded by the Output 1). (The device has restrictions on loading capacity of the output. For details, see the first note item in the table below.)
- Step 6 Set **Data Flow (Front View)** by selecting one from the eight data flow presets. (For details, see the third note item in the table below.)

Note	
a	When the Output 1 (OUT1 and IN1) and Output 2 (OUT2 and IN2) are used together at the same time, the number of cabinets loaded by the Output 2 must be less than or equal to the number of cabinets loaded by the Output 1.
b	If the screen loaded is irregular (sizes of the screen's cabinets are different), NovaLCT must be connected to configure the screen.
c	During data flow setting, pay attention to the following points. - To set the data flow, rotate the knob to select Data Flow (Front View) and press the knob to enter the data flow preview screen. Then, select one from the eight data flow presets. At last, press the knob to save the setting and press the BACK button to exit the current operation. - Ensure that the cabinets are connected one by one according to one direction - Ensure that the Ethernet Port 1 is at the beginning position of the whole data flow.

6.3.2 Advanced Configuration

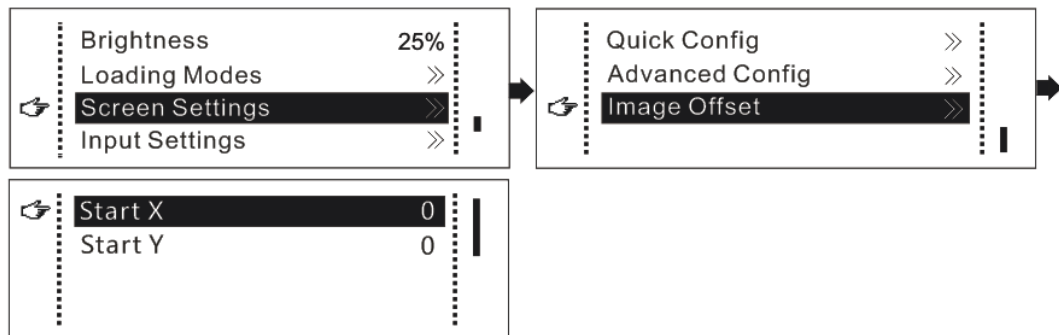
The **Advanced Config** function can be enabled when **Large Load** in loading modes is selected.

After enabling **Advanced Config**, set the **Cabinet Row QTY**, **Cabinet Col QTY**, **Start X** and **Start Y** (image offset), and **Data Flow (Front View)** for **Out1 Setting** (Output1) and **Out2 Setting** (Output 2) respectively.



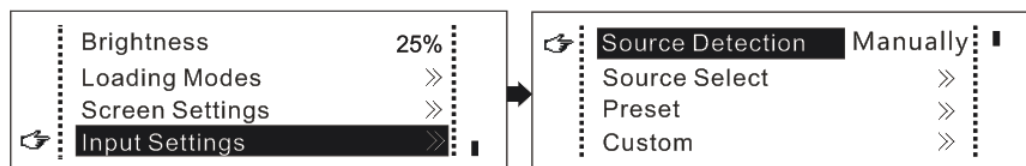
6.3.3 Image Offset

Set **Start X** and **Start Y** (the horizontal and vertical offsets of the image).



6.4 Input Settings

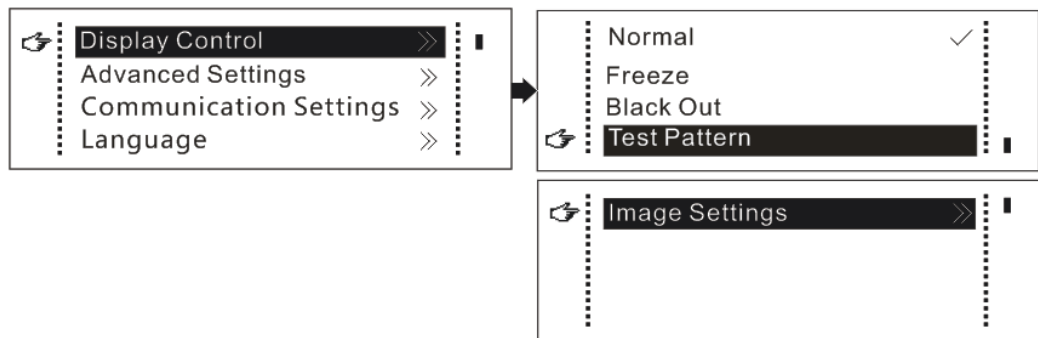
The user can set resolutions for input sources based on actual needs.



Setting Methods

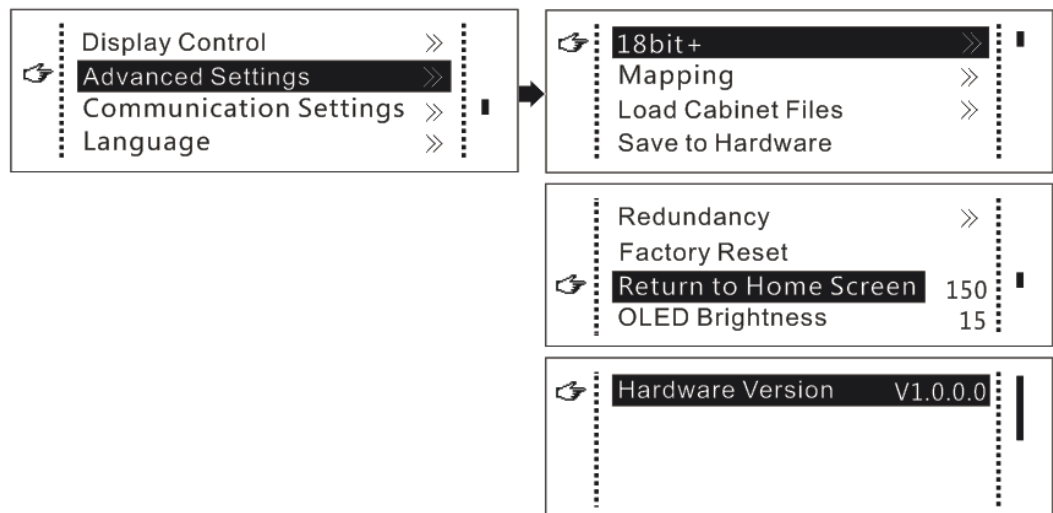
- Method 1: Set the **Preset** resolution.
Select a proper resolution from the resolution presets and press the knob to save the setting.
- Method 2: Set a **Custom** resolution.
After choosing **Custom**, set **Width (H)**, **Height (V)** and **Refresh Rate**. Then, select **Apply** and press the knob to save the settings.

6.5 Display Control



- **Normal:** Play the contents of current input source normally.
- **Freeze:** Freeze current playing.
- **Black Out:** The screen blacks out and does not display the contents that are being played.
- **Test Pattern:** The LED screen displays one of the eight test patterns, such as pure colors and line patterns.
- **Image Settings:** Set brightness of **Red**, **Green** and **Blue**, **Color Temperature**, and **Gamma** for the display based on display needs.

6.6 Advanced Settings



6.6.1 18bit+

The 18bit+ is a grayscale level of LED display. When the **18bit+** function is enabled, the grayscale level of LED display can be raised by four times, which can effectively prevent loss of grayscale caused by brightness reduction on LED display and make the display smoother.

6.6.2 Mapping

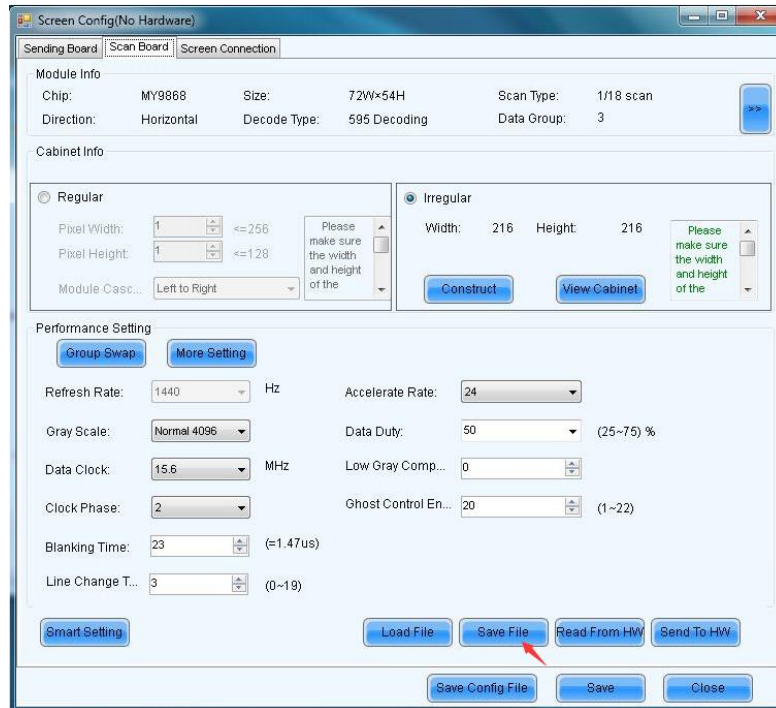
When the **Mapping** function is enabled, each cabinet's receiving card No. and Ethernet port information will be displayed in the corresponding area on the LED display. Therefore, the user can obtain the position of the receiving cards and the data flow.

6.6.3 Loading Cabinet Files

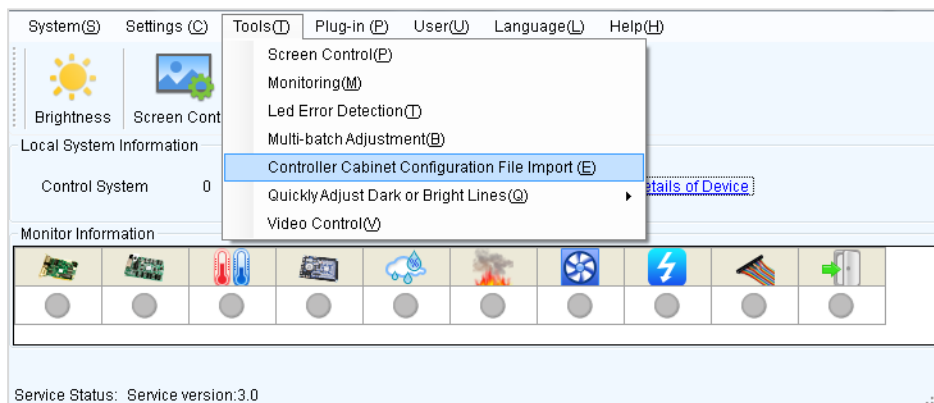
After connecting the S1 to the PC and running the NovaLCT on the PC, import the cabinet configuration files.

Step 1 Save cabinet configuration files.

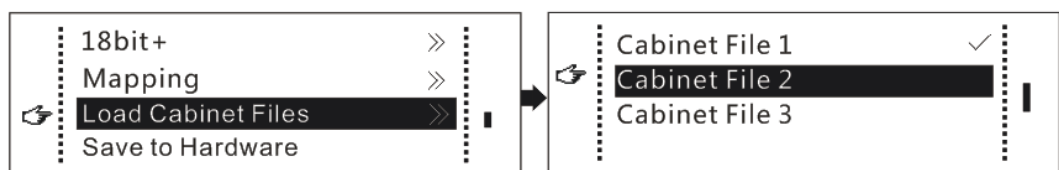
After configuring the receiving cards, click **Save File** to save the cabinet configuration files (.rcfgx) to the PC as local files.



Step 2 Import the cabinet configuration files to the S1.



Step 3 Load the cabinet configuration files.



6.6.4 Saving to Hardware

Save all configuration parameters concerning the receiving cards to the receiving cards and those parameters will not be lost even after the device is powered off.

6.6.5 Redundancy

Set the current device as the primary or backup device.

6.6.6 Factory Reset

Reset the current device to factory settings.

6.6.7 Returning to Home Screen

Set the period of time during which the system stays at the current screen before returning to the home screen automatically when there is no operation performed at the front panel.

6.6.8 OLED Brightness

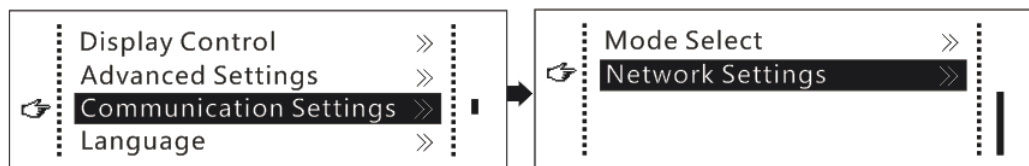
Adjust the OLED brightness which ranges from 5 to 15.

6.6.9 Hardware Version

The user can view the hardware version of the current device. If a new version is released, the user can log in to NovaLCT on the PC to view the version and update the firmware programs.

6.7 Communication Settings

Set the communication mode and network parameters of the S1.



Communication Modes

Two communication modes: **USB Preferred** and **LAN Preferred**

When the USB and Ethernet control ports are connected at the same time, the system will use the communication mode set by the user.

Network Settings

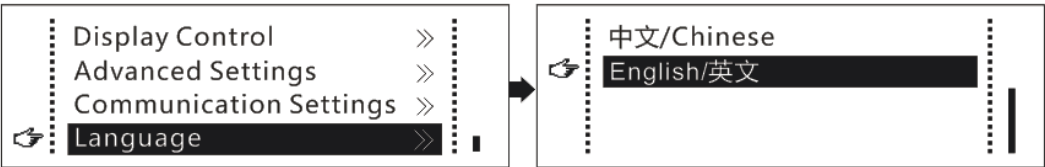
The network (**Config IPv4**) can be set manually or automatically.

When setting the network automatically, the user can only reset the network parameters.

When setting the network manually, the user can set the device's IP address (cannot conflict with IP addresses of other devices) and subnet mask, or reset the network parameters.

6.8 Language

Change the user interface language of the device.



7 Quick Screen Configuration

Step 1 Quick configuration

Set the number of cabinets, cabinet rows, cabinet columns, and data flow. For details, see [6.3.1 Quick Configuration](#).

Step 2 Input settings

Set the input source and resolution. For details, see [6.4 Input Settings](#).

Step 3 Brightness adjustment

Adjust the LED display brightness. For details, see [6.1 Brightness](#).

Step 4 (Optional) Advanced settings

Load the cabinet configuration files and configure the cabinet parameters on NovaLCT on the PC.

The user can configure other parameters in **Advanced Settings** based on actual needs. For details, see [6.6 Advanced Settings](#).

Step 5 (Optional) Communication settings

Set the control mode and network mode of the device. For details, see [6.7 Communication Settings](#).

Step 6 (Optional) Language

Set the user interface language of the current device. Chinese and English are available. For details, see [6.8 Language](#).

8 Specifications

Input voltage	100–240 VAC
Rated current	1.5 A
Rated power consumption	20.0 W
Operating temperature	-20°C–60°C
Ambient humidity	10%RH–90%RH, no condensation
Dimensions	482.6 mm x 288.5 mm x 45.0 mm
Net weight	3.85 Kg
Space required	1 RU