STORMLED

User's Manual

Controller MCTRL 4K

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Version: Rev1.0.1

Statement

Welcome to use the product from Xi'an NovaStar Tech Co., Ltd. (hereinafter referred to as "Novastar"). It is our great pleasure to offer this manual to help you understand and use the product. We have striven for precision and reliability during the compilation of this manual, and the contents of this manual are subject to change at any time without further notice. If you have any problem during use or you have any suggestion, please feel free to contact us according to the contact information provided in this manual. We will do our utmost to satisfy your needs. We would like to express our sincere appreciation to your suggestions and make assessment for adoption as soon as possible.

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Trademark

STORMLED is the registered trademark of StormLED.

Safety Statement

To avoid potential hazards, please use this controller according to regulations. Power outlet should be installed near the controller and easy to reach. In the event of breakdowns, non-professionals are not allowed to disassemble the controller for maintenance. Please contact the after-sales department of NovaStar timely.

⚠	High voltage danger: The operating voltage range of this product is 100-240V AC.
⚠	Grounding: This product is grounded through the grounding cord of power supply. Please keep the grounding conductor well grounded.
⚠	Electromagnetic interference: Keep this product far away from magnets, motors and transformers.
⚠	Moisture proof: Keep this product in a dry and clean environment. In case of liquid immersion, please pull the power plug out immediately.
⚠	Keep this product away from flammable and explosive substances.
⚠	Prevent liquids or metal fragments from dropping into the product in order to avoid safety accidents.

FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment .This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.

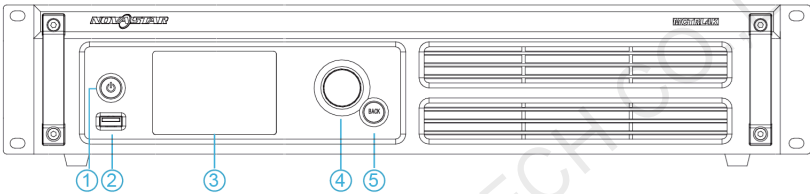This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Table of Contents

1 Appearance

Front Panel

①: Power button; Press the button for startup. After startup, press and hold the button for 4~5 seconds to power off.
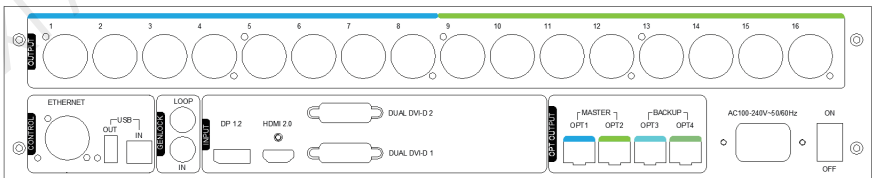
②: USB interface for connecting USB drives only(unable to connect computers).

③: Operation screen

④: Knob; Pressing the knob indicates Enter or OK, rotating the knob allows us to select or adjust.

⑤: BACK; Back to the previous menu.

Rear Panel

| Inputs	
DP 1.2	DP 1.2 interface
HDMI 2.0	HDMI 2.0 interface
DUAL DVI-D1/D2	Dual-link DVI interface
Outputs	
1~16	16-channel Neutrik Gigabit Ethernet outputs
OPT1~4	4-channel optical fiber outputs OPT1 is corresponding to Ethernet port 1~8. OPT2 is corresponding to Ethernet port 9~16. OPT3 is the backup of OPT1. OPT4 is the backup of OPT2.
Control	
ETHERNET	Control interface
USB	IN: cascade input or connecting PC; OUT: cascading next unit.
GenLock	
IN	Genlock synchronous signal, making sure the picture on LED display is in sync with external Genlock source. Genlock type: Blackburst
LOOP	Genlock loop output
Power	
AC 100-240V ~ 50/60HZ	AC power interface

Note: Type A(flat) USB interface is not allowed to be connected to control computer directly.

2 Signal Connection

Please refer to the previous chapter of interface intrduction and the figure below to connect requied hardwares.(Note: Please disconnect the power of the equipment while connecting signal.)

4K×2K Super
large LED Display

MCTRL 4K

Power

PC   Laptop   DVD Player   PC
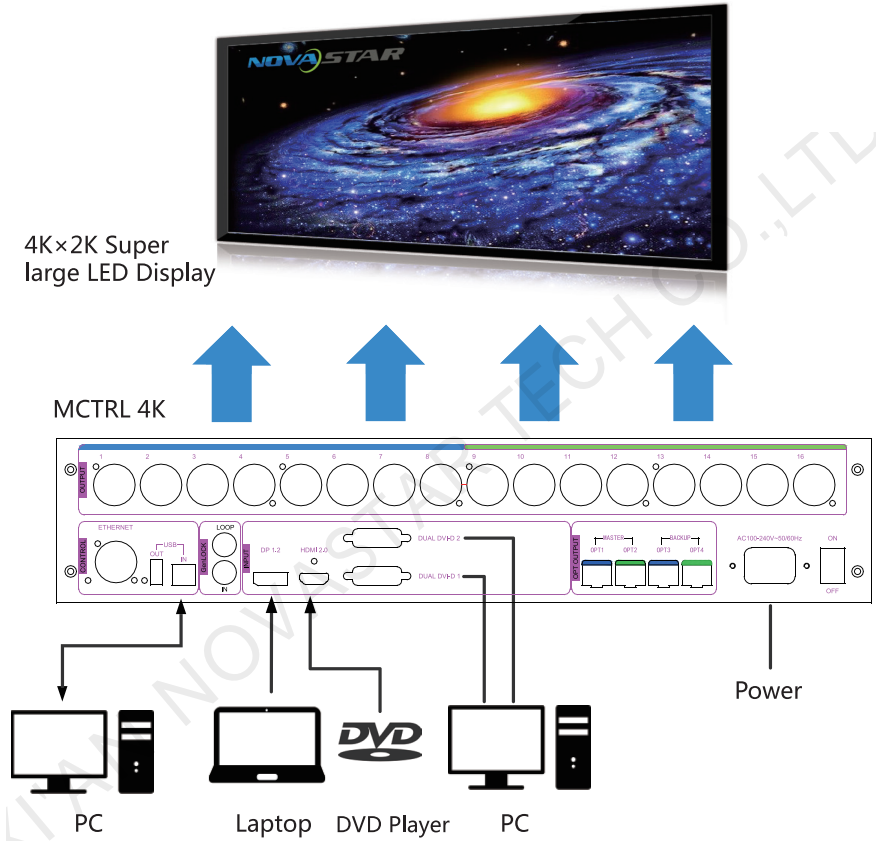
If it is required to control multiple MCTRL4K units, please connect them according to the figure below.

PC   USB   USB   USB

3 Dimensions

(mm)
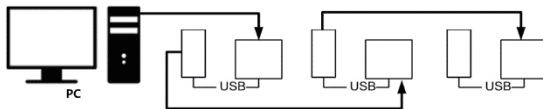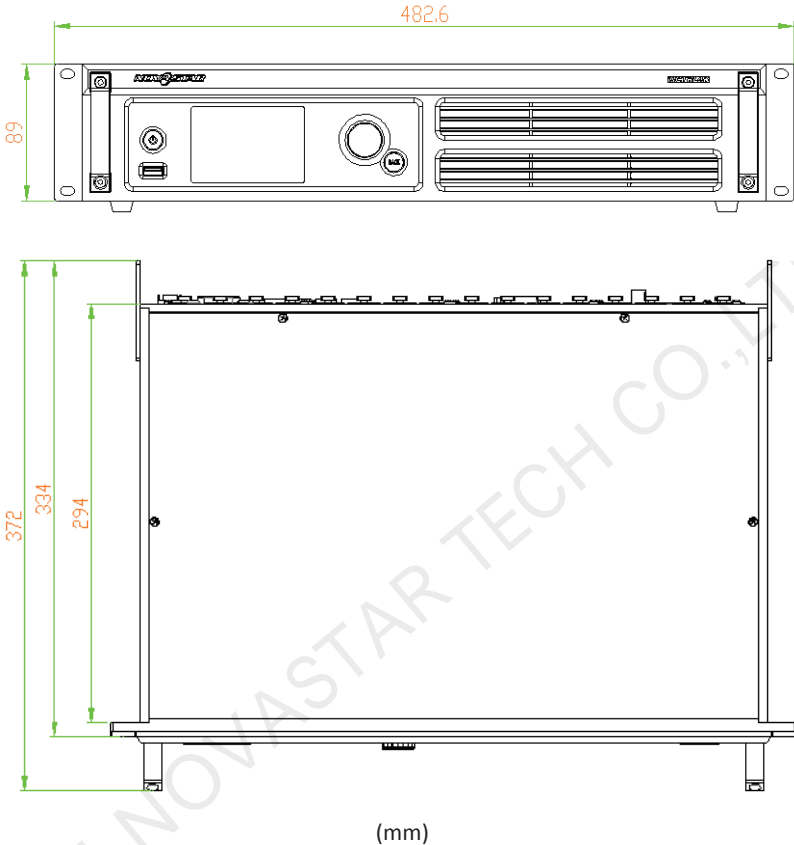
4 Operating Motion Instruction

Knob:

- While in main interface, press the knob to enter menu interface;
- While in menu interface, rotate the knob to select menus and press the knob to select current menu or enter submenus;

- Select a menu with parameters and rotate the knob to adjust the parameters. Please remember to press the knob again for confirmation after adjustment.

BACK: A return button to exit from current menu or operation.

Lock /Unlock buttons: Press and hold the knob and ESC key simultaneously.

5 Main Interface

Switch on the controller and the main interface of its screen is shown as below:
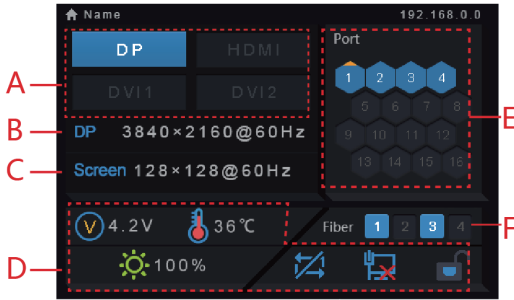
A: Input state of signal sources. Blue indicates it has signal while gray indicates no signal;

B: Current input source and its resolution, frame rate. For example, the information of two DVI sources will be displayed alternately here when dual-link DVI is selected as input.

C: Width, height and frame rate of the LED display being configured;

D: Status, the meanings of each status icon are introduced as follows:

	Supply voltage of mainboard core
	Temperature inside the controller
	Brightness of LED display
/	DVI1 and DVI2 are not synchronous/synchronous
/ /	Control interface, not connected/connected to USB port/ connected to Ethernet port
/	Screen unlocked/locked

E: Connection status of Ethernet ports. Blue indicates that the connection is available and the port works as master control while gray indicates the port is not connected or the connection is unavailable. Mark on the upper left corner of the icon indicates that the connection is available and the port is in redundancy state.

F: Connection status of optical fiber ports. Blue indicates that the connection is available and the fiber port works as master control while gray indicates the port is not connected or the connection is unavailable. Mark on the upper left corner of the icon indicates that the connection is available and the port is in redundancy state.

6 Menu Operation

MCTRL4K is powerful and easy-to-use. In general, users can start a LED display and operate it normally through first four steps. Users also can set other options in the menu selectively for better display effects.

Step 1 Input Mode

MCTRL 4K supports two input modes: **mosaic** and **muli-card.**

In mosaic mode, Auto, DP, HDMI or DVI×2(Mosaic direction is optional.) can be selected as video input source.

In multi-card mode, MCTRL4K is used as two independent controllers and the loading capacity of each is up to 3840×2160@30Hz. Now both DVI 1 and DVI 2 inputs are available and can be displayed on LED display simultaneously. But only one of them can be set at the same time, namely, the currently selected video input source.

In multi-card mode, the corresponding outputs of DVI 1 are Ethernet port 1~8 or OPT1 while the corresponding outputs of DVI 2 are Ethernet port 9~16 or OPT2.

Tip: When input source is set to "Auto", the controller will automatically detect input source depending on the priority order of DP>HDMI>DVI.

Step 2 Input Resolution

Users are capable of setting the resolution of each input source as required.
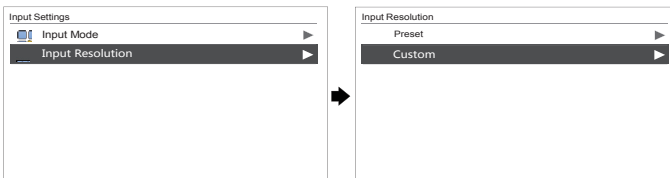
Input resolution is able to be set through the following two methods:

I: Preset

Choose an appropriate resolution from the standard presets, or move on to method II: Custom.
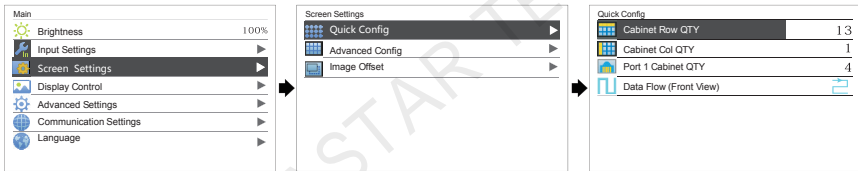
II: Custom

Rotate the knob to set custom width(increasing by even numbers), custom height and custom refresh rate. Then select "Apply" and press the knob to apply. If not applied, custom resolution setting will be unavailable.

Step 3 Quick Config

Operating steps of quick config:

Step1   Switch on the LED display. Go to Step 2 if the cabinets display normally. It is needed to load cabinet file first and save it to receiving card if the cabinets display abnormally. Please view relevant chapter for detailed operations.

Step2   Enter the submenu of "Quick Config" and rotate the knob to get into other options for settings.

Main		
☼ Brightness	100%	
▦ Input Settings	▶	
▦ Screen Settings	▶	
▦ Display Control	▶	
☼ Advanced Settings	▶	
● Communication Settings	▶	
● Language	▶	

Screen Settings	
▦ Quick Config	▶
▦ Advanced Config	▶
▦ Image Offset	▶

Quick Config	
▦ Cabinet Row QTY	13
▦ Cabinet Col QTY	1
▦ Port 1 Cabinet QTY	4
⊓ Data Flow (Front View)	⇄

Step3   Set the rows and columns of the cabinets to be loaded according to actual situation of the screen.

Step4   Set the number of cabinets loaded by Ethernet port 1. The controller has some limitations of the loading capacity of Ethernet port. Please see Notes a) for details.

Step5   Set Data Flow of the screen. Please see Notes c), d), e) of quick config.

Notes:

a) If n ports are used to load, the number of cabinets loaded by the first (n-1) ports must be:	*Example:*
	If Ethernet port 1~7 are used to load, the number of cabinets loaded by port 1~6 must be the same and the integer multiple of the number of rows/columns. Therefore, it is needed to set the number of cabinets loaded by port 1 according to the actual situation during quick config. The number of cabinets loaded by port 7≤ the number of cabinets loaded by port 1.
1. the same,	
2. the integer multiple of the number of rows/columns,	
3. no less than the cabinets loaded by the nth port.	*In multi-card mode, the corresponding output ports are 9~16 if DVI 2 is used as input. Now port 9 is considered as the first port. So it is required to set the number of cabinets loaded by port 9.*

b) If there are irregular cabinets, cabinets with different sizes or irregular screens, it is required to connect NovaLCT-Mars for screen configuration.
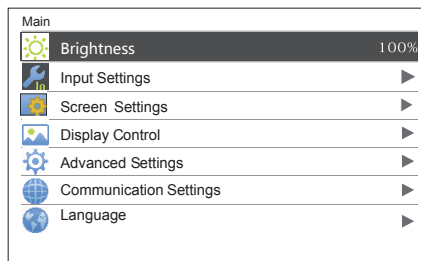
c) During data flow settings, you can view the results of different data flow presets on LED display by rotating the knob. When you are satisfied with the LED display picture, press the knob to save the settings. Directly press BACK button to exit from current operation and the previewed data flow won't be saved.

d) During data flow settings, you must make sure the physical connection of each port is along the same direction and down to next one.

e) During data flow settings, you must make sure the start position of port 1 is the start of whole physical connection.

Step 4 Brightness Adjustment

Back to the main menu and press the knob. Select the corresponding value in Brightness menu. Rotate the knob to adjust brightness now.

Main	
☼ Brightness	100%
Input Settings	▶
Screen Settings	▶
Display Control	▶
Advanced Settings	▶
Communication Settings	▶
Language	▶

Screen Settings

Besides Quick Config, Advanced Config and Image Offset can be done as well in Screen Settings.

Advanced Configuration
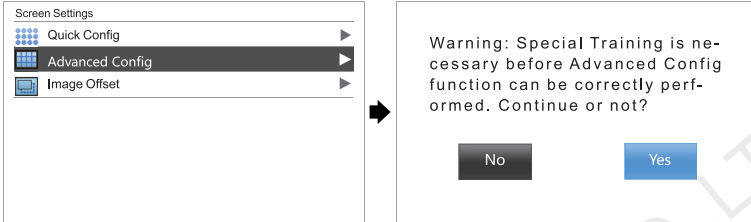
Choose **Yes** to get into Advanced Config page. Choose **Enable** to set the loading capacity of each Ethernet port, which includes the settings of Cabinet Row QTY, Cabinet Col QTY, Start X(horizontal offset), Start Y(vertical offset) and Data Flow.

Image Offset

Start X(horizontal offset) and Start Y(vertical offset) of the total picture loaded by the controller can be set in this option.

Display Control
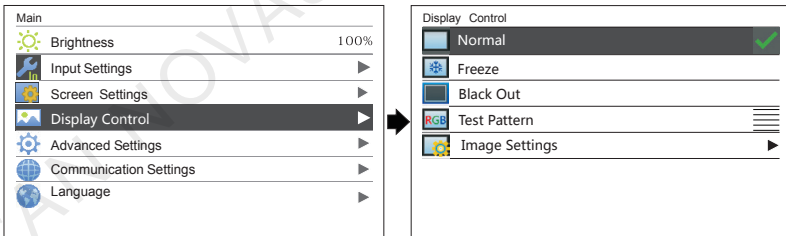
- **Normal:** Play the content of current input source normally**.**
- **Freeze:** Freeze current content.
- **Black Out:** The LED screen becomes dark and displays nothing.
- **Test Pattern:** It includes eight types of test patterns such as pure color and line pattern etc.
- **Image Settings:** Set the brightness of red, green and blue, color temperature, Gamma value as required. Adjust these options to the values you are satisfied with, and then save them to hardware.

Advanced Settings

Advanced Settings includes settings of multiple main functions as shown in the figure below. Following chapters will introduce the details of each function.
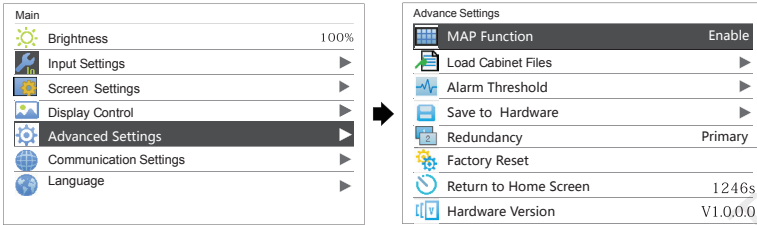

MAP Function

When Map Function is enabled, each of the cabinets will display the port number and Ethernet port number they belong to. It is easy and convenient for users to know about the data flow mode and load.
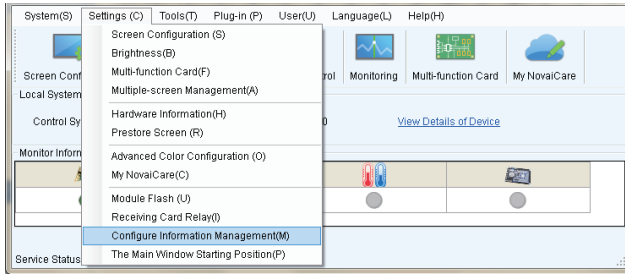
Load Cabinet Files

Connect the controller to PC and run NovaLCT-Mars on the PC. Import the cabinet configuration files saved before.

1) Save cabinet configuration files

After the configuration of receiving card is completed, click [Save to File] to save cabinet configuration files(.rcfg) to local files on PC.
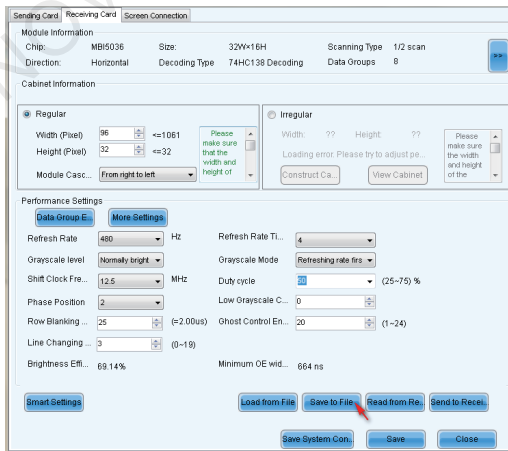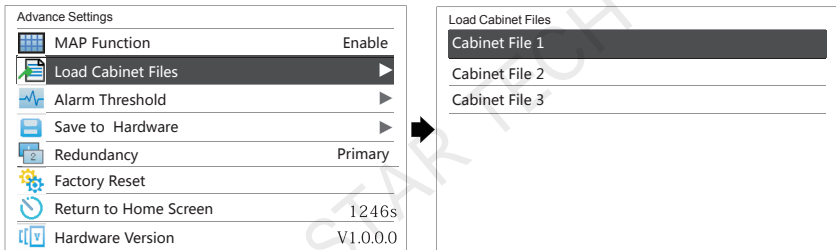
2)　Import cabinet configuration files to MCTRL4K.

Tip: After entering the Settings page of MCTRL4K, NovaLCT-Mars will automatically read the configuration files which have already existed in MCTRL4K. Users are able to modify the names and orders of these files or delete them.

3)　Load cabinet files

4)　Save cabinet files to hardware

Alarm Threshold

Set maximum and minimum values of temperature and voltage。

Save to hardware

Save all the configurations related to receiving cards to receiving cards and the data won't be lost during power failure.

Redundancy

Set this controller as primary controller or backup.

Factory Reset

Restore the unit to factory settings.

Return to Home Screen

If the system remains on current interface for the certain period of time without
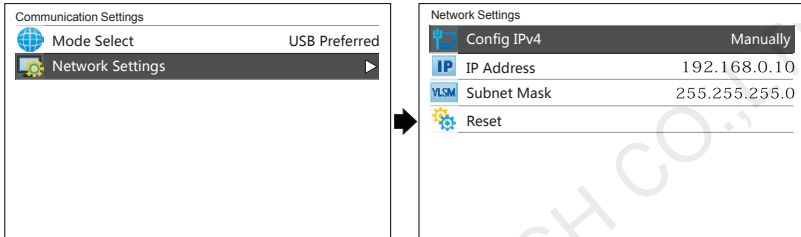
any operation, then it will go back to the homepage automatically.

Hardware Version

Check the hardware version of this controller. Connect LCT-Mars through PC to upgrade the firmware program if new versions are released.

Communication Settings

Set communication mode and network parameters of MCTRL 4K.

Communication Settings	
🌐 Mode Select	USB Preferred
⚙️ Network Settings	▶

Network Settings	
Config IPv4	Manually
IP Address	192.168.0.10
Subnet Mask	255.255.255.0
Reset	

Communication modes include USB preferred and LAN(Local Area Network) preferred. When both USB control interface and Ethernet control interface are connected to PC, the controller defaults to USB preferred and will control the LED display via USB interface. Otherwise, the sysytem will control LED display via LAN.

Network Settings include manual and automatic. Please note that IP address cannot conflict with the address of other devices during manual setting.

Language

Change interface language of the unit.

7 Technical Specifications

Inputs		
Port	Qty	Specifications
DP	1	DP1.2 standard Max. supported resolution:3840×2160@60Hz, Max. width and height are 3840(downward compatibility)
HDMI	1	HDMI-2.0 standard Max. supported resolution:3840×2160@60Hz Max. width and height are 3840 (downward compatibility)
Dual-link DVI	2	VESA standard Max. supported resolution:3840x1080@60Hz and 3840×2160@30Hz (downward compatibility)

Outputs		
Port	Qty	Specifications
RJ45	16	Neutrik Gigabit Ethernet port
OPT	4	Optical fiber port, single mode and double fiber, LC port, 1310mm OPT1 is used for transferring the data of port 1-8 OPT2 is used for transferring the data of port 9-16 OPT3 is the backup channel of OPT1 OPT4 is the backup channel of OPT2 Either Gigabit Ethernet port or optical fiber port can be used at the same time. Two types of ports cannot be used to connect devices simultaneously.

Control		
Port	Qty	Notes
ETHERNET	1	Control interface
USB	2	Control interface of upper computer and cascading interface

Overall Specifications	
Input Power	AC 100-240V, 50/60Hz
Overall Power Consumption	30W
Operating Temperature	-20~60℃
Dimensions(L×W×H)	482.6×372×89(mm)
Weight	4.6kg

8 FAQs and Precautions

FAQ	Solutions
Nothing is displayed on the LED display	Check whether the power is correctly connected and switched on; Use test patterns to make sure whether the LED display is correctly connected and can normally operate; Check whether the unit has signal input and the output is set to "Black Out"; Check whether the screen configuration as well as the parameters are correct.
Color cast occurs when the pictures of HDMI on computer are displayed on LED display	Press and hold BACK button for 10 seconds and a menu will pop up. Select different YUV-RGB formats to make the color of the pictures on LED display back to normal.
Nothing is displayed on the LED display in DVI mosaic mode	Check whether two DVI input signals are synchronous. You can check the synchronization icon on LCD.
The resolution of HDMI signal is unable to reach 3840x2160@60Hz	Check whether the HDMI interface of video card is Standard 2.0.
Precautions	1) At present, this product only supports rectangular screens composed of cabinets with same size and specifications for configuration without PC. It is needed to connect a PC for configuration of irregular cabinets and screens. 2) Configuration without PC and configuration with PC is not suggested to be done on the same display at the same time. 3) In multi-card mode, network cables for DVI1 screen configuration can only be connected to Ethernet port 1-8 while cables for DVI2 to port 9-16. 4) Only specific models of receiving card support MAP function(Currently, only receiving card A5 and receiving card MRV 270 of customized programs support it.)

Please troubleshoot the devices according to above steps. If problems cannot be solved, please contact our local dealers or customer service department.

Since there are components with high voltage inside the controller, please DO NOT maintain it by yourself for the sake of your safety.