



NOVASTAR VX4S LED Video Controller User Manual

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User Manual
LED Video Controller VX4S/VX4

Statement

You are welcome to use the products 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 strive for precision and reliability during the compilation of this manual, and the contents of this manual are subject to change without notice. If you have any problem in use or you have any suggestions, please feel free to contact us according to the contact information provided in this manual. We will do our utmost to satisfy your needs. Also, we would like to express our sincere thanks for your suggestions and make an assessment as soon as possible for adoption. LTD.

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TECH

Safety Statement

To avoid potential hazards, please use this equipment according to the regulations. In case of damages, non-professionals should not disassemble it for maintenance without permission. Please contact the after-sales department of the company.



High voltage danger: The operating voltage of this product is 100-240V AC.



Grounding: This production is connected to the ground via the ground wire of the power supply. Please ensure good grounding of the grounding conductor.



Electromagnetic interference: The device should be kept far away from magnets, motors, and transformers.



Moisture-proof: Keep the equipment in a dry and clean environment. In case of liquid immersion, please pull the plug immediately. XI'AN



Keep away from flammable and explosive dangerous goods.



Prevent liquids or metal fragments from being immersed into the machine to avoid safety accidents.

1. Model description Description (input interface type)

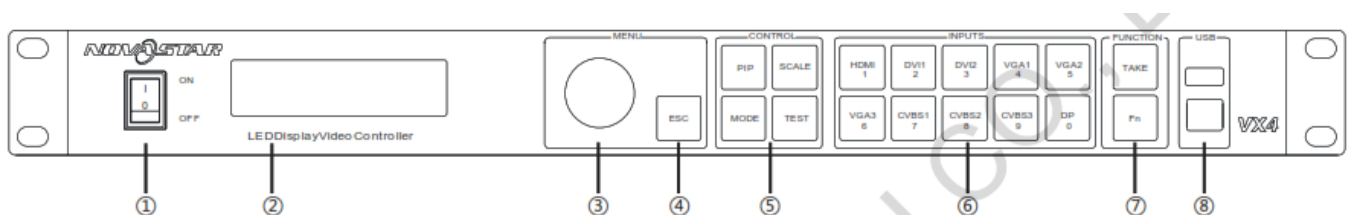
VX4 DVI×2, VGA×3, CVBS×3, HDMI×1, DP×1

VX4S DVI×1, VGA×2, CVBS×2, HDMI×1, DP×1, SDI×1

Tips: VX4 has different types and numbers of interfaces with VX4S, but their functions and specifications are basically the same. In this manual, VX4 is described as an example.

2. Appearance

Front Panel



1. Power switch.
2. Operation screen (Please see the section-Main Interface for detail).

3. Knob. To press knob means Enter or OK, rotating knob represents selection or adjustment.
4. ESC. Escape current operation or selection.
5. Four control keyboard shortcuts. PIP: PIP Turn-on/off. The lighting of this key represents the turn-on of PIP; otherwise, PIP is turned off. SCALE: Picture zoom turn-on/tum-off. The lighting of this key represents the turn-on of zoom function: otherwise, zoom function is unavailable. MODE: Shortcut menu of loading or storage of display model. The key is light when entering the model or shortcut menu, in case of exiting, the key is not bright. TEST: Shortcut of turn-on/off of the testing picture. In case of entering the testing picture, the key is bright; otherwise, the key is not bright.
6. Shortcut keys for switching of 10 signal input sources. Short press to set as the main screen input source, and long press to set as PIP input source. The key is bright after pressing when the video source has a signal; the key flashes when the input of the video source has no signal. The setting result can be checked while setting on the display screen and OLED screen.

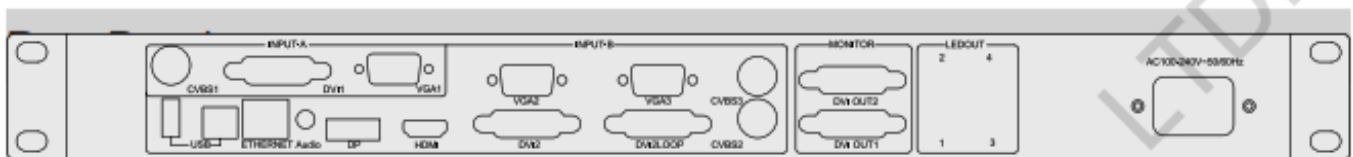
Note: You can enter numbers, such as layer size and offset value, by pressing the number buttons. The number button will be highlighted after being pressed.

7. Function keys.

TAKE: Display switching shortcut keys After short pressing TAKE key, PIP will be opened; if it has been opened, the switching between MAIN and PIP will be realized
Fn: Custom shortcut keys

8. USB(Type A) USB Cascade OUT

USB(Type-B): Communication with PC, or Cascade IN

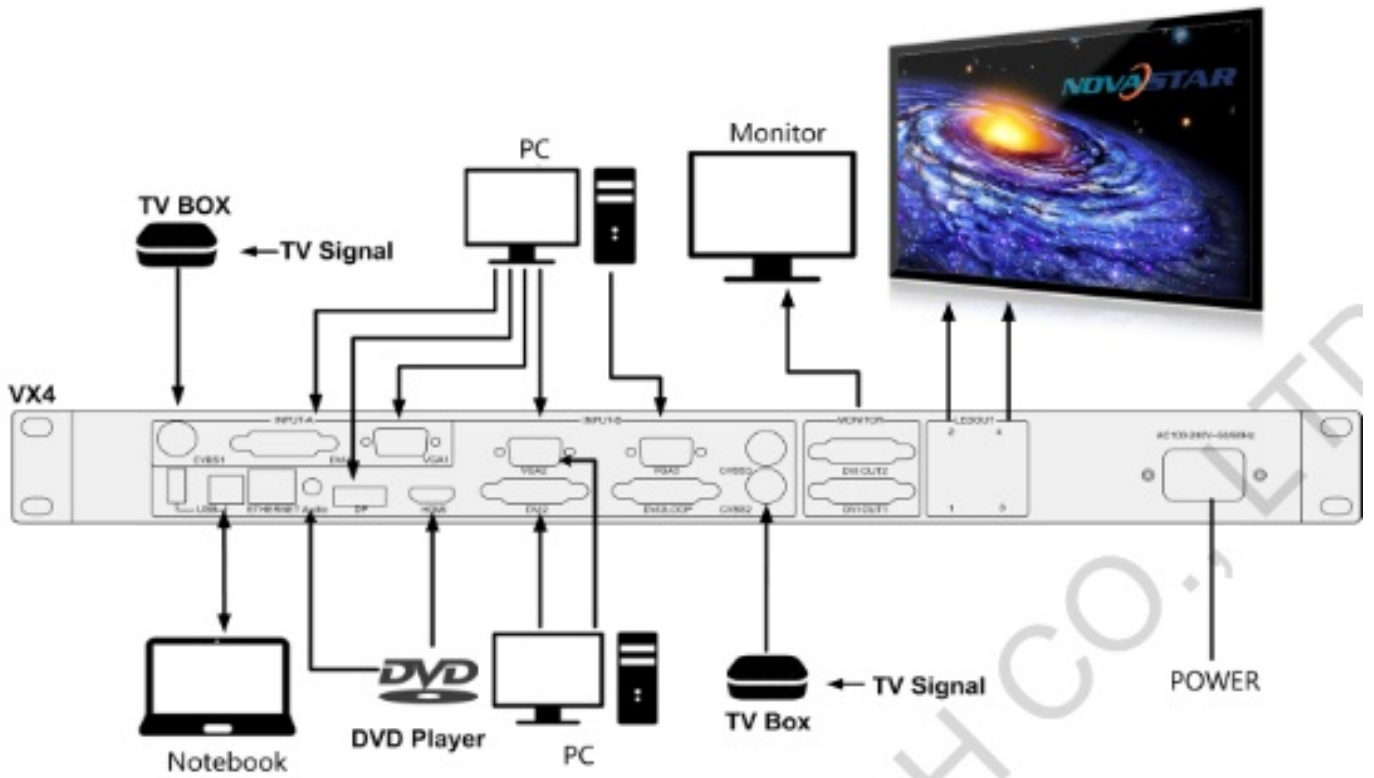


| | |
|-----------------------|--|
| Input Source | |
| Audio | Audio Input |
| DP | DP Input |
| HDMI | HDMI Input |
| CVBS1~CVBS3 | 3-Channel PAL/NTSC TV composite video Inputs |
| VGA1~VGA3 | 2-Channel DVI Inputs |
| Output Interface | |
| DVI LOOP | DVI LOOP Output |
| Monitor -DVI OUT1 | DVI Monitoring Interface 1 |
| Monitor -DVI OUT2 | DVI Monitoring Interface 2 |
| LED Out 1 2 3 4 | 4 Gigabit Ethernet outputs Only Ethernet port 1 supports audio outputs When the multifunction card is connected for audio decoding, the multifunction card must be connected to the Ethernet port 1. |
| Controlling Interface | |
| ETHERNET | Network Control (Communication with PC, or Access Network) |
| Type B, female USB | USB Control (Communication with PC, or Cascade IN) |
| Type A, female USB | USB Cascade OUT |

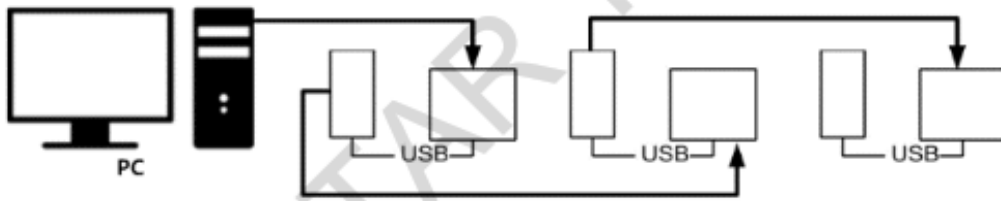
Tips: The two USB interfaces (typeA) on the front panel and rear panel are both forbidden to connect with PC directly.

3 Signal connection

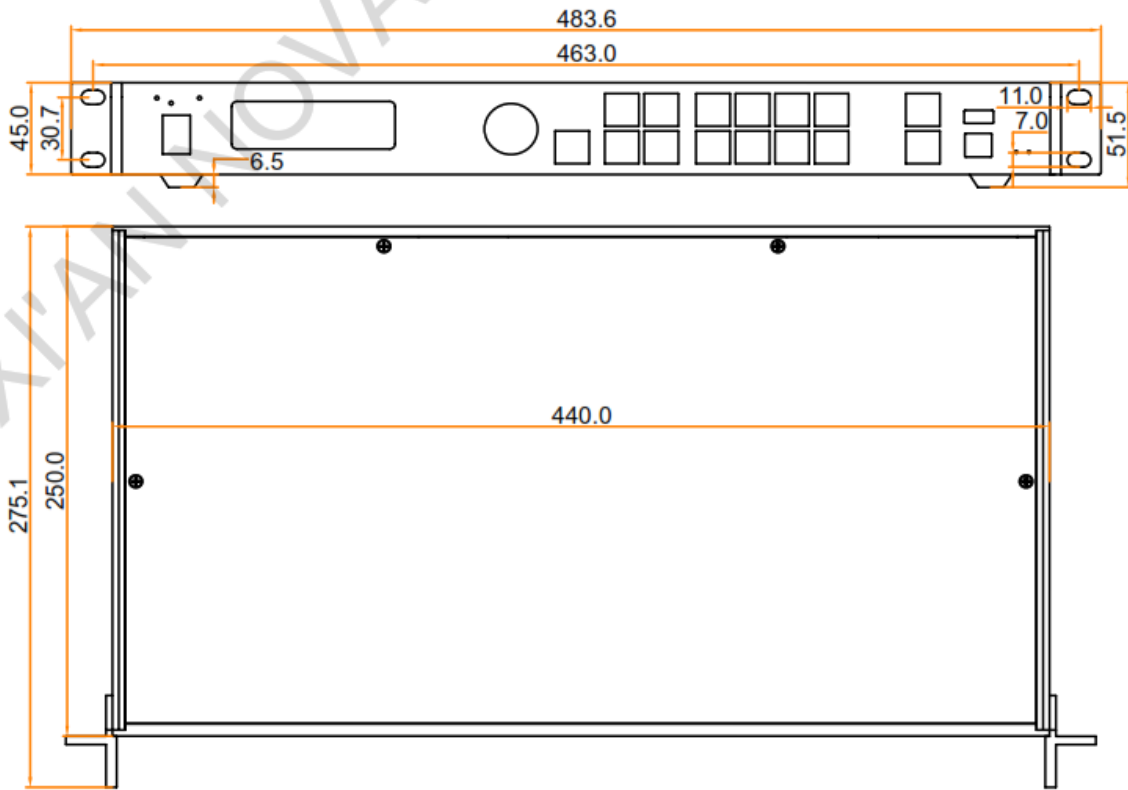
Connect the required hardware equipment reference with the interface descriptions of the previous chapters.



If it is required to control more than one set of VX4, please connect them according to the following figure.



4 Dimension



VX4 's dimension (Unit:mm)

5 Operating motion instruction know:

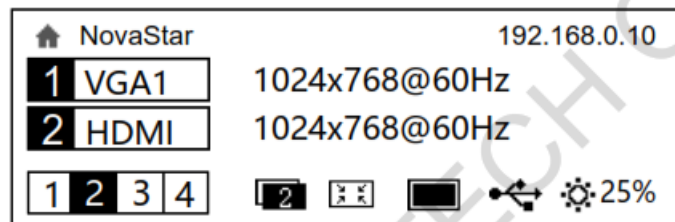
- Press the knob under the main interface to enter the operation interface menu;
- Rotate the knob to select menu or press the knob under the operation interface of the menu to select current menu or enter submenu;
- Rotate the knob to adjust the parameter after selecting the menu with the parameter; press the knob again for confirmation after adjustment.

ESC: Return key, exit current menu or operation

Key lock/unlock long-press knob and ESC key simultaneously LTD.

6.Main Interface

After starting the controller, the main interface of the OLED display is as follows:CO.,



First row: Company name; the name and IP of the product are shown alternately; Second row: Main screen 1; signal source; input source signal format; Third row: PIP 2; signal source; input source signal format; Fourth row: Status bar the meanings of all icons are shown below.

| | |
|--|--|
| | LED Output (it is output Port 2 in primary mode currently, and the backup status is displayed as) |
| | PIP is turned off |
| | PIP is turned on |
| | The current effect is a point-to-point display |
| | It is "scale down" mode |
| | It is "scale up" mode |
| | Image Mosaic is not enabled; |
| | Image Mosaic is enabled; |
| | It is USB control currently |
| | It is network port control currently |
| | The current brightness is 25% |



Sign of press key lock. When this icon appears at the main interface, it is in a locking state for key and knob functions.

7 Operation instruction

The functions of VX4 are powerful with very simple operations, and multiple operations can be completed with a knob and return keys. The design of more than one shortcut keys makes operations more efficient.

Generally, the LED display can be used normally, and the brightness is moderate after conducting the following four steps: Input settings → Screen settings → Brightness → Output settings. Other menus such as screen control and senior setting can help users better control LED displays LTD.

See the following section for details of operations.

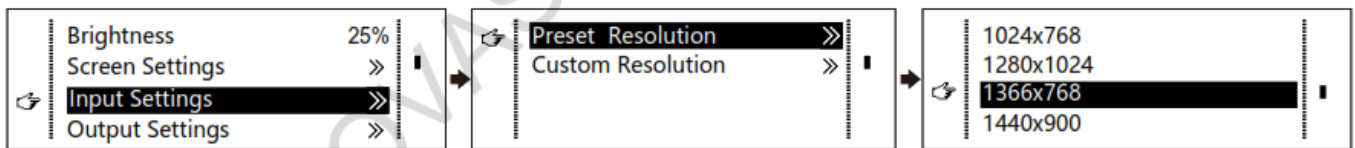
Step1: Input Settings

Set resolution of input source signal. Resolution can be directly set and changed for digital input interfaces DVI, HDMI, and DP. Resolution can only be modified with other input methods on input devices.

Input resolution can be set in two methods:

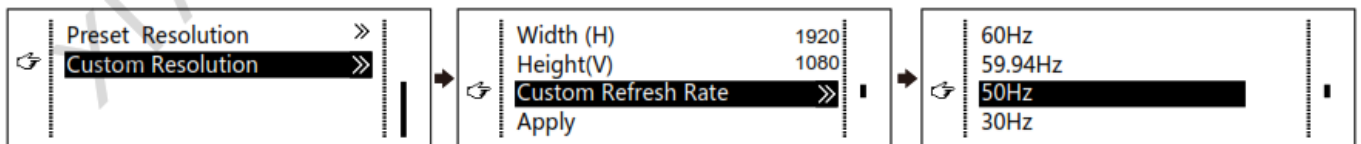
Method one: Preset Resolution

Selection is made in preset resolution of the controllers. If there is no preset resolution, you can select the second method and customize resolution.



Method two: Custom Resolution

Set Horizontal Res, Vertical Res, and Custom refresh rate and then select “Apply” and press the knob for application. If the application is not confirmed, custom resolution is invalid.

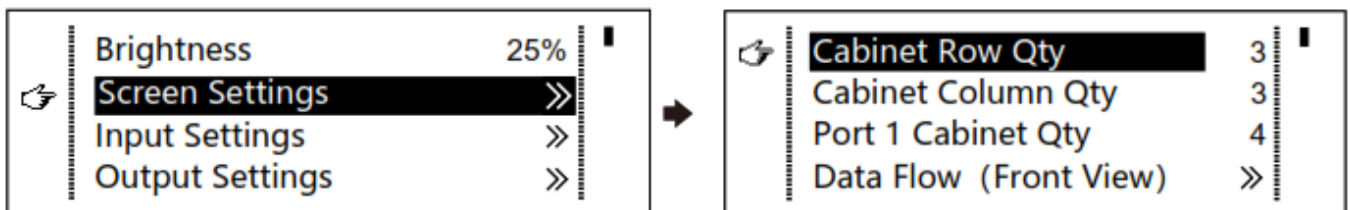


Step2: Screen Settings

The precondition of the Screen setting in the shortcut is that the screen must be a regular rectangle (not special-shaped), the cabinet must be a regular rectangle and the size of each cabinet are identical.

Step 1 The screen being power-on, if the cabinet is in the normal display, enter into Step 2; if the cabinet is in the abnormal display, first, load the cabinet file, and save it to the receiving card; see the detailed operation in Advanced Settings ;

Step 2 Return to the “Screen Settings” submenu. Rotate the button to switch to submenus of other options respectively to perform configurations, as shown in the following figures:



Step 3 Set Cabinet Row Qty and Cabinet Column Qty according to the actual situation of the screen;

Step 4 Set Port1 Cabinet Qty. The device has some limitations on the cabinet quantity of ports. For details, see precautions for screen settings;

Step 5 Set the Data Flow (Front View)s. Pay attention to precautions for screen settings c),d) and e) below.

Precautions for screen settings:

a If the number of ports with loads is n ($n \leq 4$), the first $n-1$ ports must load the same number of cabinets, which must also be an integral multiple of the number of cabinet rows or columns and be greater than or equal to the number of cabinets for the n th ports.

Example:

For example, if port 1, port 2, port 3 have loads, port 1 and port 2 must have the same number of cabinets, which must also be an integral multiple of the number of cabinet rows or columns. Therefore, you only need to set port 1 cabinet Qty according to the actual situation when setting the screen. The number of receiving cards port 3 loads must be smaller than or equal to port 1.

b In the case of special-shaped cabinets, different cabinet sizes, and special-shaped screens, the NovaLCT-Mars software is required to be connected to configure the screen.

c During the Data Flow setting, you can rotate the button to see the effects of different data flow on the screen in real-time. If you are satisfied with the effect of the current data flow, you must press the button to save the setting. You can press the ESC to exit from the current operation.

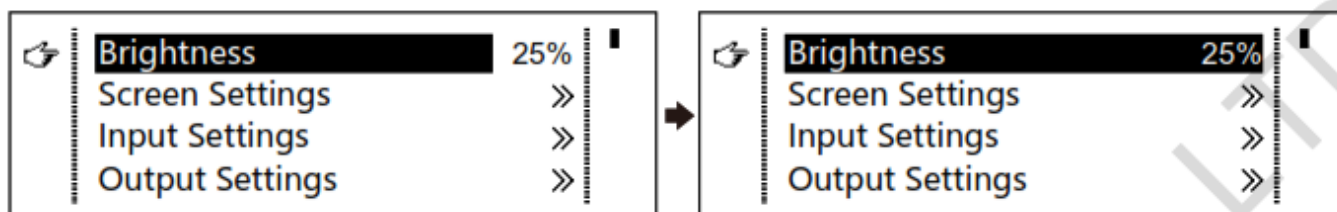
d During the Data Flow setting, you must ensure that the data flow of each port is downward in the same direction.

e During the Data Flow setting, you must ensure that Port 1 is the start position of the whole data flow connection.

VX4 can load 2.3 million ($2048 \times 1152 @ 60\text{Hz}$) pixels in maximum. The width of lateral load can reach 3840 pixels in maximum ($3840 \times 600 @ 60\text{Hz}$); the longitudinal load can reach to 1920 pixels in maximum ($1920 \times 1200 @ 60\text{Hz}$).

Setp3: Brightness

Return to the main menu interface Press the Knob to select the corresponding value of Brightness You can rotate the Knob to adjust the value at this time.



Setp4: Output Settings

Output settings are divided into three cases:

First one: disable Scaling, i the sizes of the output image and input image are the same, and original scale output is used If the input resolution is smaller than the LED display in one direction, LED display may not become bright in this direction; if the input resolution is greater than the LED display in one direction, the input contents may not be displayed completely in this direction This option is applicable to the application scenarios requiring point-to-point display Horizontal offset and vertical offset of images can be set according to the needs, and at this time the displayed contents may move to the left or top at the LED display this point [Scaling] is disabled

Input Source

2000x1000



LED Display

2000x1000



The size of LED display is suitable :
The contents can be completely displayed and the LED display will become bright completely

1000x1000



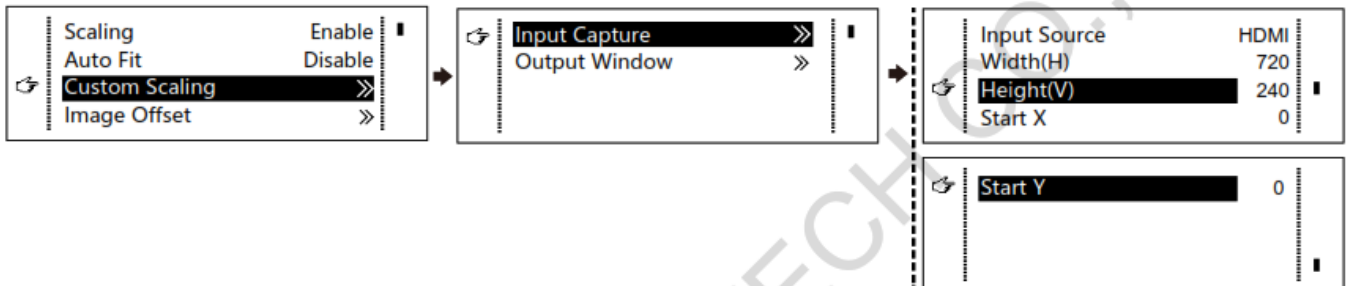
The LED display is smaller than the input source :
Only some parts will be displayed

2500x1500

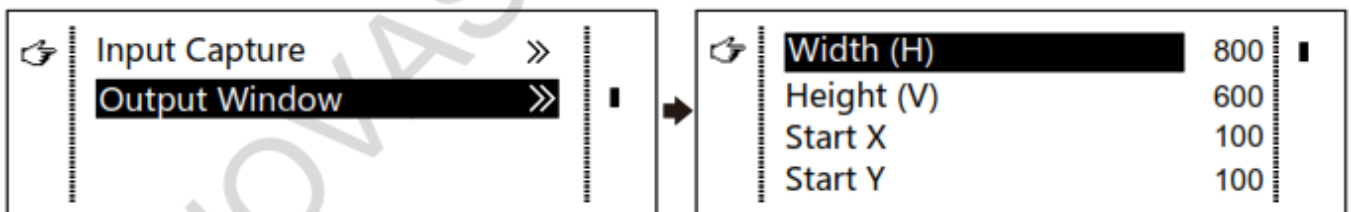


The LED display is greater than the input source :
Some LED displays will not become bright

Second one: AutoFit At this point [Scaling] is enabled, and [Auto Fit] is enabled When enabling [Auto Fit], the input contents will be fully zoomed to the size of LED display, and the input contents will be adaptive to the size of LED display This mode is suitable for full-screen playback of the contents Third one: Custom Scaling At this point [Scaling] is enabled, while [Auto Fit] is disabled The following steps should be performed for custom scaling: Step 1 Set the input Capture, capture part of the interesting screens from one starting point of inputting image and display it on LED display It is generally required to set Horizontal Res (smaller than or equal to the lateral resolution of input source), Vertical Res (smaller than or equal to the vertical resolution of input source), horizontal X and vertical



Step 2 Set output window, the size of the window is smaller than or equal to the size of LED display; after setting the window, the images can only be adaptive to the displayed size within the range of window This option is applicable to the application scenarios requiring reserving border at the LED display or restricting playing area.



After setting according to the above two steps, the captured contents will only be input and displayed at the settings area on the LED display, as shown below:

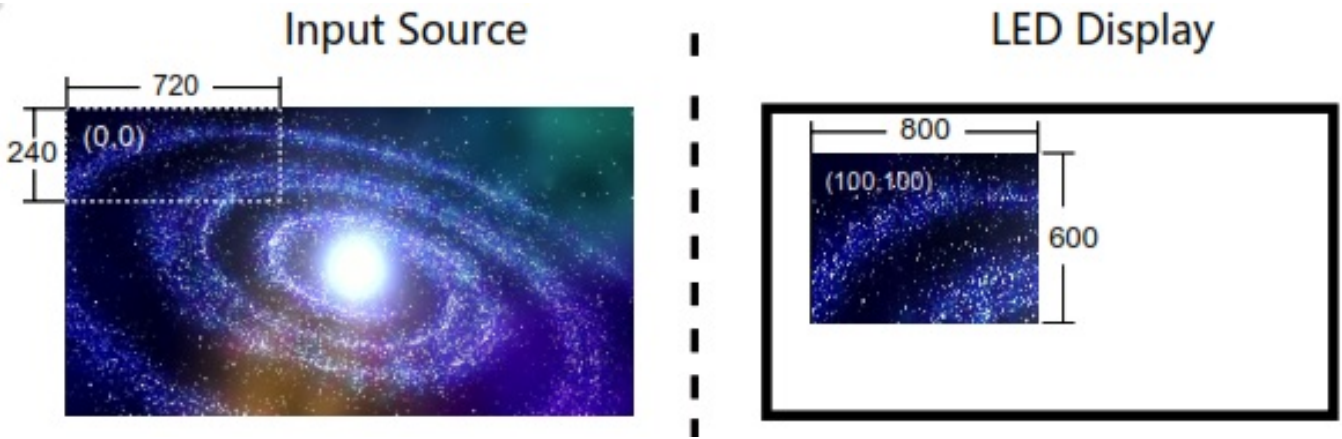


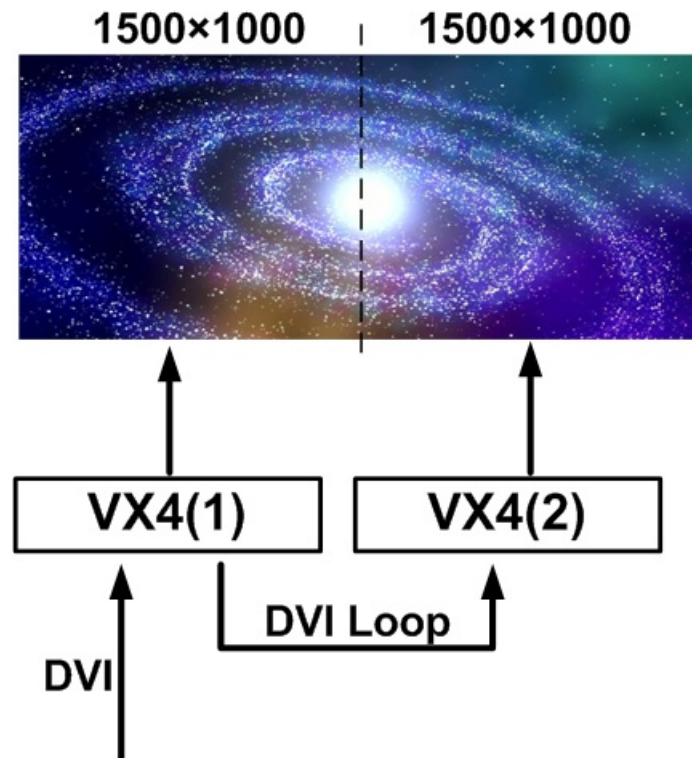
Image Mosaic

When the display screen is huge, two or more VX4 need to be cascaded for loading the huge screen;

Choose the method of Image Mosaic: Equal Division, Unequal Division

- Equal Division: Each VX4 has the same load area. It is only required to set total pixel points, rows, columns of the big screen, and the serial No of each VX4
- Unequal Division: Each VX4 could have a different load area. It is required to set the total pixel points and the load area size, as well as load area, starting position of each.

Image Mosaic example: The total number of pixels of LED display is 3000×1000, exceeding the load capacity of a single VX4. Two sets of VX4 are used for Image Mosaic processing. The connection method is shown in the right figure.

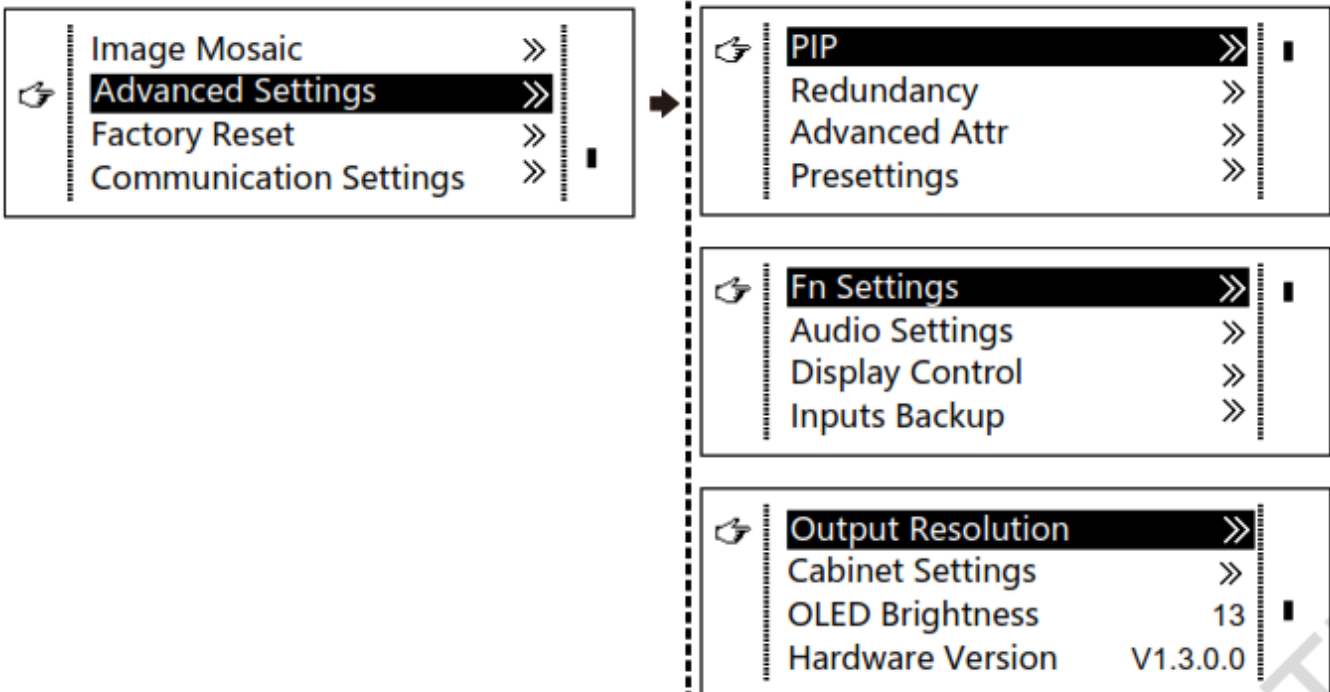


Please choose Equal Division or Unequal Division while setting detailed parameters. The specific parameter settings are shown in the following tables.

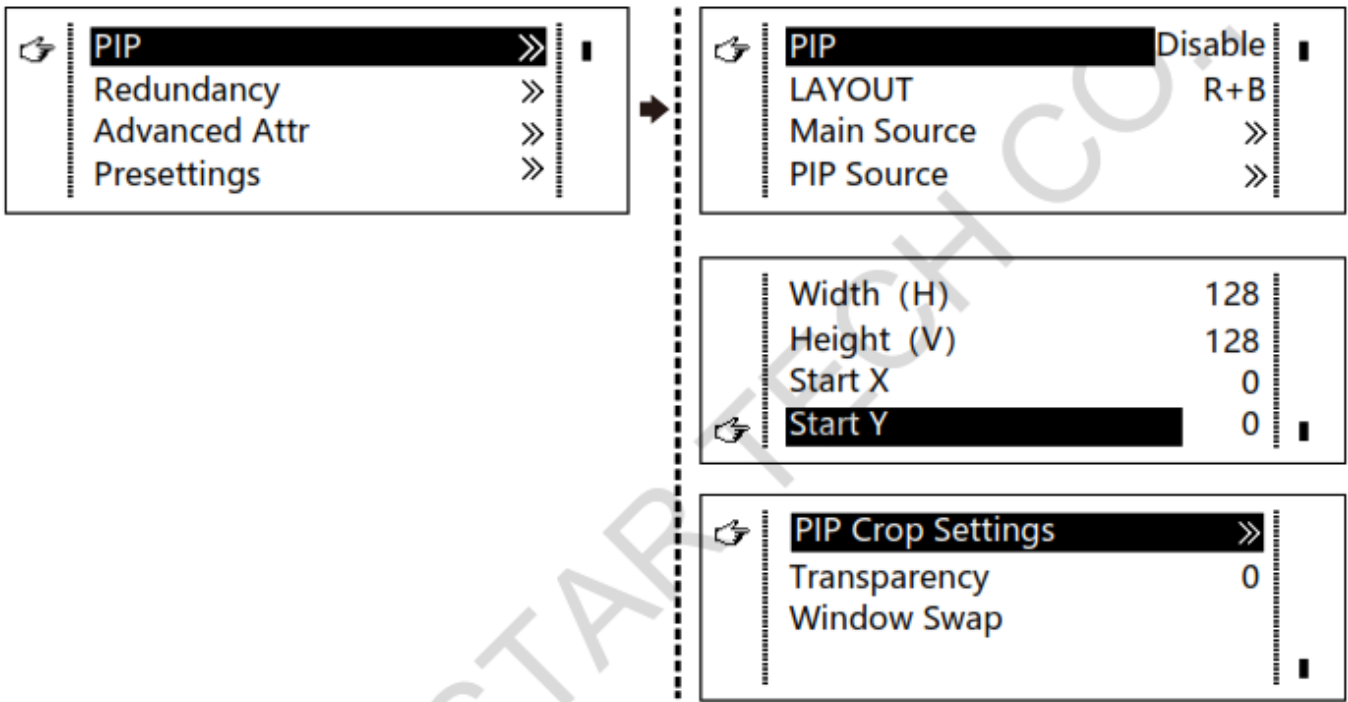
| | |
|----------------------|-------------|
| Equal Division | |
| | VX4 1 VX4 2 |
| Total Width Pixels | 3000 |
| Total Height Pixels | 1000 |
| Mosaic Row | 1 |
| Mosaic Column Qty | 2 |
| Load Area Position 1 | 2 |

Advanced Settings

Several setting options of main functions are included in advanced settings, as shown in the figure below. Operation of each function will be detailed for users in the following text.



PIP



Control the turn-on/off of PIP, Set input source of the main screen and PIP, as well as parameters of PIP
 Layout: the position of PIP relative to the main screen, including eight modes of layout such as Custom, Left Top, Left Bottom, Right Top etc When choosing any mode except Custom, the values of horizontal and vertical offset of PIP are able to adjust to the corresponding values of layout automatically The meaning of each layout mode is shown below:

- Custom refers to that the size and position of PIP need to be set
- Left Top, Left Bottom, Right Top, Right Bottom, Center refer to that PIP overlaps with the top-left corner, bottom-left corner, top-right corner, bottom-right corner, and center of the main screen
- Top Bottom, Left Right refer to that main screen and PIP are distributed from top to bottom or left to right

Main source/PIP source: Input source switching of the main picture and PIP is the same as the role of input source switching on the front panel

Horizontal Res: Horizontal offset of PIP Vertical Res: Vertical offset of PIP

Main source/PIP source: Input source switching of the main picture and PIP is the same as the role of input source switching on the front panel

Horizontal Res: Horizontal offset of PIP

Vertical Res: Vertical offset of PIP

Horizontal X : Horizontal width of PIP

Vertical Y : Vertical height of PIP

PIP Crop Settings: Picture is cropped from the set starting position and is displayed on PIP and its size is set horizontal width and vertical height

Enable this function and then set horizontal width, vertical height, horizontal X, and vertical Y

Transparency: the transparency of PIP

Window Swap: swap play content of main screen and PIP

| | | Input Source of Main Channel | | | | | | | | | |
|------------------------|-------|------------------------------|------|------|------|------|------|-------|-------|-------|----|
| | | HDMI | DVI1 | DVI2 | VGA1 | VGA2 | VGA3 | CVBS1 | CVBS2 | CVBS3 | DP |
| PIP Input Source | HDMI | - | √ | × | √ | √ | √ | √ | √ | √ | √ |
| | DVI1 | √ | - | √ | × | √ | √ | × | √ | √ | √ |
| | DVI2 | × | √ | - | √ | √ | √ | √ | √ | √ | √ |
| | VGA1 | √ | × | √ | - | √ | √ | × | √ | √ | √ |
| | VGA2 | √ | √ | √ | √ | - | × | √ | √ | √ | √ |
| | VAG3 | √ | √ | √ | √ | × | - | √ | √ | √ | √ |
| | CVBS1 | √ | × | √ | × | √ | √ | - | √ | √ | √ |
| | CVBS2 | √ | √ | √ | √ | √ | √ | √ | - | × | √ |
| | CVBS3 | √ | √ | √ | √ | √ | √ | √ | √ | - | √ |
| | DP | √ | √ | √ | √ | √ | √ | √ | √ | √ | - |

The Conflict List of PIP Signal Source (VX4S)

| HDMI | | Input Source of Main Channel | | | | | | | |
|------------------------|-------|------------------------------|-----|------|------|-------|-------|-----|----|
| | | HDMI | DVI | VGA1 | VGA2 | CVBS1 | CVBS2 | SDI | DP |
| PIP Input Source | HDMI | - | × | √ | √ | √ | √ | √ | √ |
| | DVI | × | - | √ | √ | √ | √ | √ | √ |
| | VGA1 | √ | √ | - | × | √ | √ | √ | √ |
| | VGA2 | √ | √ | × | - | √ | √ | √ | √ |
| | CVBS1 | √ | √ | √ | √ | - | × | √ | √ |
| | CVBS2 | √ | √ | √ | √ | × | - | √ | √ |
| | SDI | √ | √ | √ | √ | √ | √ | - | √ |
| | DP | √ | √ | √ | √ | √ | √ | √ | - |

- √ denotes the input sources that can be used by both the main screen and PIP at the same time
- × denotes the input sources that cannot be used by both the main screen and PIP at the same time
- – denotes the main screen and PIP use the same input source

Redundancy

Set this controller as a primary or backup mode Advanced Attribute



- VGA Auto ADJ: Sampling parameters of VGA input signal are automatically adjusted so that the VGA picture is clear and complete. Select this menu and then press the knob once and perform VGA automatic adjustment once (VGA1 does not support this feature)
- ADC calibration: when analog signal accesses, processors that are not calibrated by

ADC may have defects such as color cast or picture dark VX4 can automatically make ADC calibration based on input analog signal (including CVBS and VGA) to solve the problems above Select this menu and then press the knob once and perform ADC calibration once

- Video Synchronization: allow that the input and output of VX4 are synchronous
- Go Homepage(s): The time period during which the system stops at the current interface and then automatically returns to the home screen when there is no operation The system default value is 60s

Pre settings

Save the current configuration parameters as Pre settings. The Pre settings can be directly loaded next time, and 10 Pre settings are saved by default

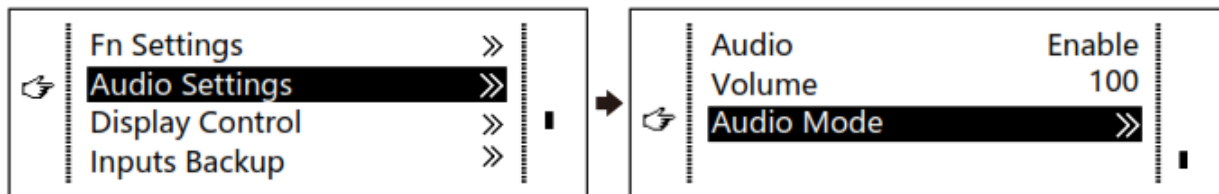
Custom Button

Fn Settings The functions of the custom button include Black Out, Freeze VGA Auto ADJ Video Synchronization Press Fn key to directly conduct the function switch NOVASTAR

Audio Settings

Control the enabling /disabling of Audio, volume, and Audio mode

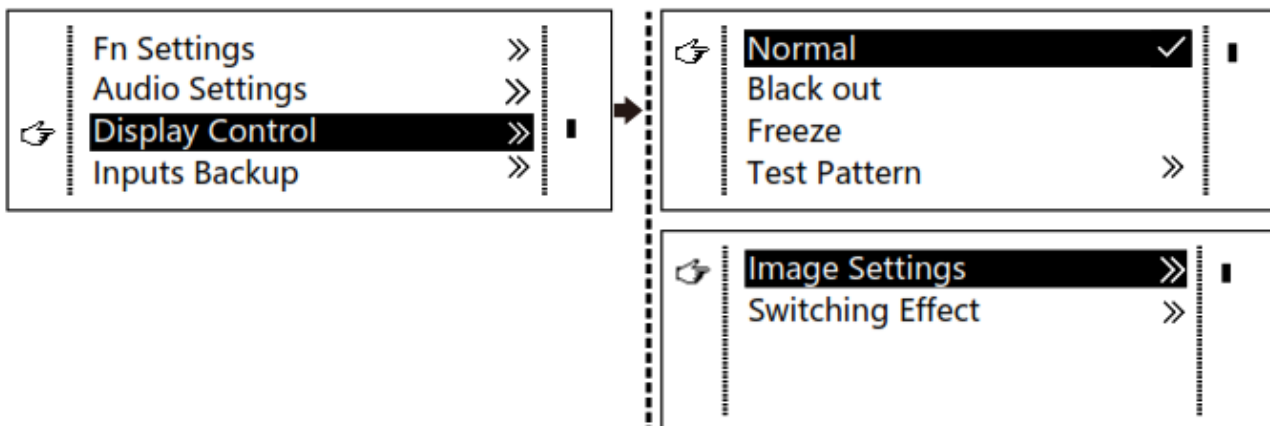
For example, when using the audios input via Audio In port, it is required to enable audios first and then select the Audio mode to be fixed; when using the Audio from HDMI, set the Audio mode to be accompanied after enabling audios and then switch source to HDMI, and the Audio we hear comes from HDMI



Contents

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Display Control



- Normal: Normally display
- Blank Out: The display is blank
- Freeze: The current playlists are frozen
- Testing Pattern: There are eight kinds of testing screens in total, including pure color and lines
- Image Settings

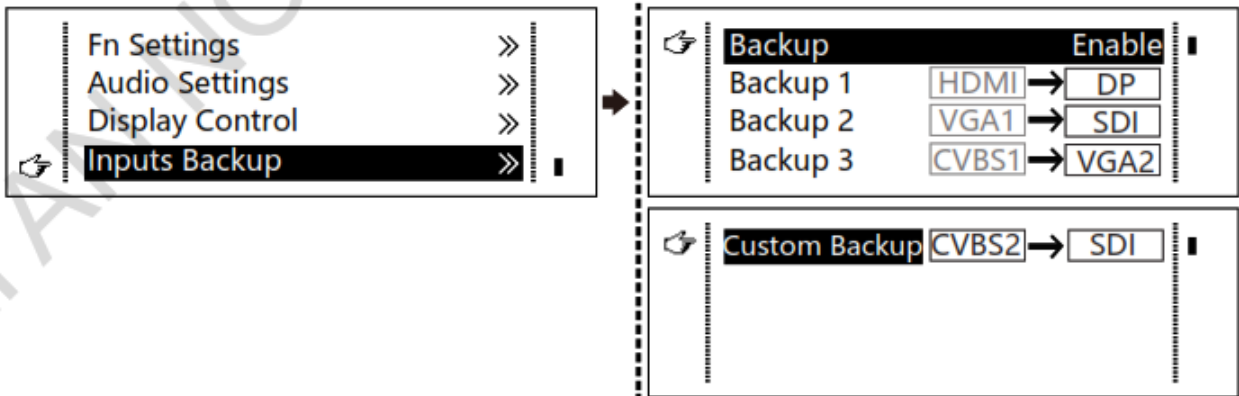
Contrast, Saturation, Hue, Color Temperature, Red, Green, Blue, and Gamma values are set according to the requirements After they are adjusted to satisfaction, the parameters should be saved

- Switching Effect: Set the effects when switching screens, including Quick switch, Fade, Shrink Center, Shrink Left Top, Zoom Center, Zoom Left Top, and turning off After selecting the desired effect, it will take effect after pressing the knob

Tips: When enabling the PIP function, the switching effect will automatically disappear. Only when the PIP function is turned off, the special effect function of channel switching can take effect.

Inputs Backup

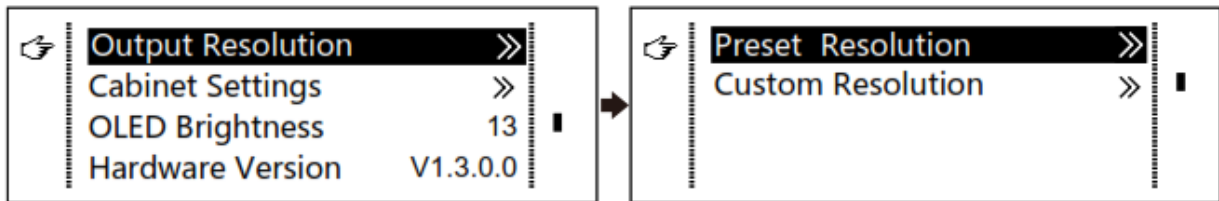
To specify backup for input source and automatically switch to backup source if the signal of input source has faults, which makes it more reliable



Indicating that DP has been set as the backup of HDMI and the main input source(which cannot be changed) is on the left side of the arrow while backup(which can be changed) is on the right side; Both main input source and backup can be customized in Custom mode

Output Resolution

This function can be used to set the output resolution of monitoring Users can set the function according to actual use and choose either Reset Resolution or Custom.



Cabinet Settings

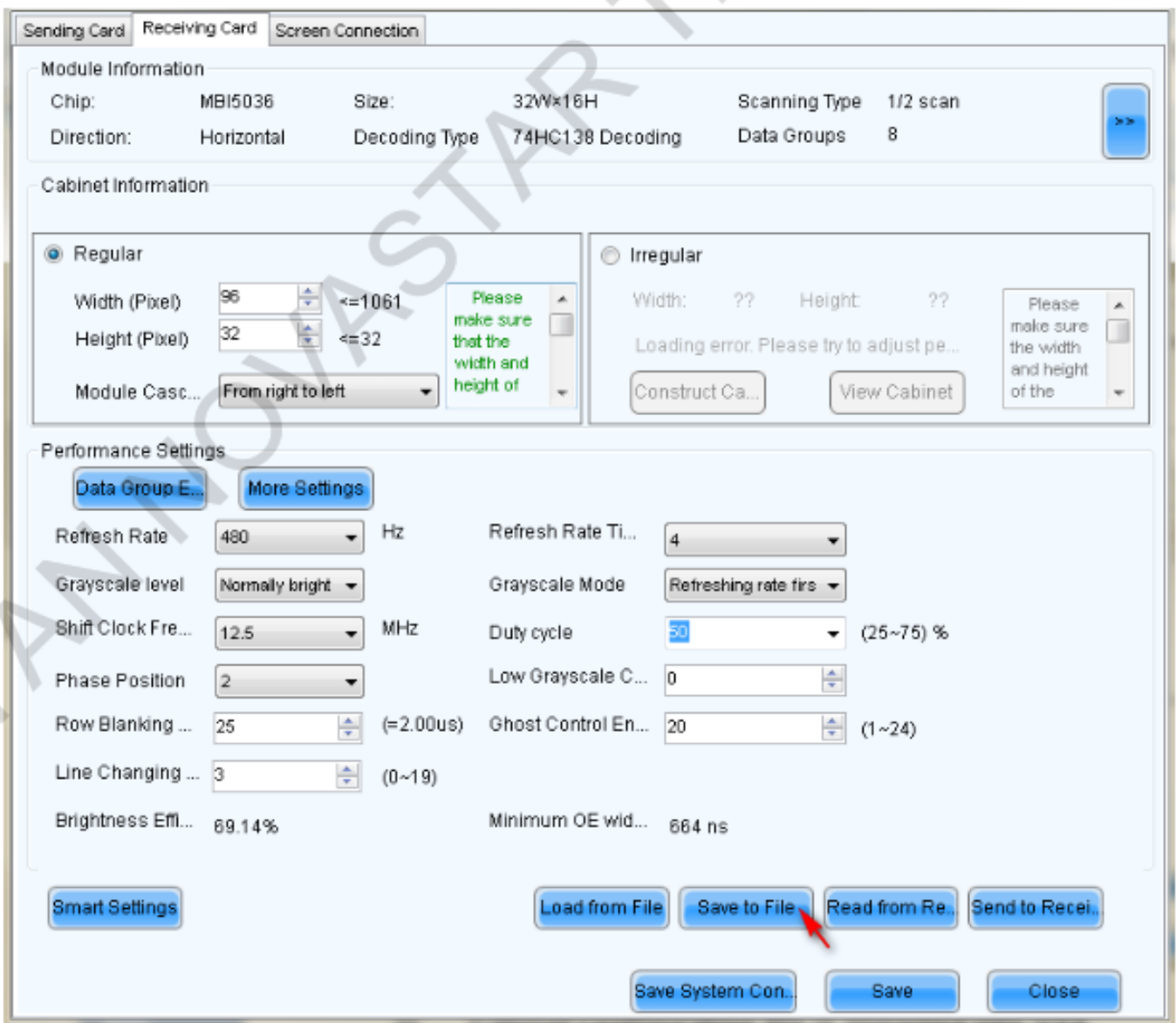


Load Cabinet Files
LTD.

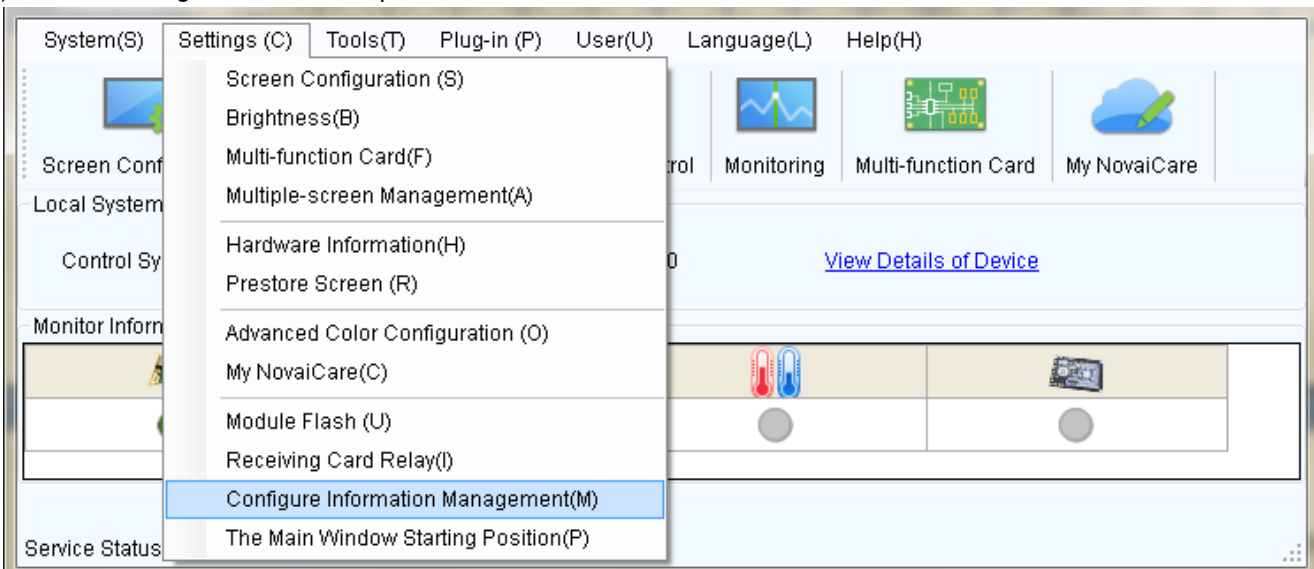
VX4 is connected with PC NovaLCT-Mars runs on PC and the cabinet setting file saved previously is imported into the controller

1) Save the cabinet configuration file.

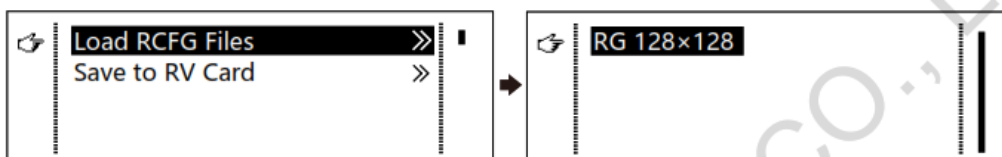
After receiving card is configured, click and save cabinet configuration file (.rcfg) to local file on PC.



2) Cabinet configuration file is imported into VX4.



3) Load Cabinet Files



Save to RV Card

All current configurations about the receiving card of VX4 are saved into receiving card and will not be lost after a

power fault

OLED Brightness

Adjust the gray scale of the OLED display

Hardware Version

View the hardware version of VX4 If a new version has been published, LCT-Mars can be connected via PC and the hardware program of VX4 can be upgraded.

Factory Reset

Reset to the factory default setting

NOVASTAR

Communication Settings

Set the communication mode and network parameter of VX4

The communication modes include USB priority and LAN (local area network) priority When VX4 is connected to USB control and LAN control interface simultaneously, USB takes priority in the settings, adopts USB control; otherwise, LAN takes priority in the settings, adopts LAN control

The network parameter can be set both manually and automatically Ensure that the IP address is not in conflict with other equipment when setting parameters manually.

Language

Switch Language

Specifications


| Input | | | |
|--------------|--------|------|--|
| Port | Number | | Resolution |
| | VX4 | VX4S | Specification |
| VGA | 3 | 2 | VESA Standard, support max 1920×1200@60Hz input |
| DVI | 2 | 1 | VESA Standard (support 1080i input), support HDCP |
| CVBS | 3 | 2 | PARENTS |
| HDMI | 1 | 1 | EIA/CEA-861 standard, in accordance with HDMI-1.3 standard, support HDCP |
| DP | 1 | 1 | VESA Standard \de |
| SDI | 0 | 1 | 480i, 576i, 720P, 1080i/P 4\ |

| Output | | | |
|-----------------------------------|----------------------|---|--|
| Port | Number | | Resolution Specification |
| DVI LOOP | 1 | 1 | Consistent with DVI input |
| DVI | 2 | 2 | Monitoring output connector |
| SDI LOOP | 0 | 1 | Consistent with SDI input |
| LED OUT | 4 | 4 | 4 Gigabit Ethernet outputs Only Ethernet port 1 supports audio output When the multifunction card is connected for audio decoding, the multifunction card must be connected to the Ethernet port 1 Maximum horizontal resolution is 3840 pixels Maximum vertical resolution is 1920 pixels |
| Specification of complete machine | | | |
| Input Power | AC 100-240V, 50/60Hz | | |
| Overall Power Consumption | 25W | | |
| Operating Temperature | -20~60°C | | |
| Size | 482.6×251.5×45 mm | | |
| Weight | 2.55 Kg | | |

FAQ

| Questions | Methods |
|------------------------------------|--|
| LED display is off | Inspect whether the power connection is correct and the switch has been turned on ; Play the Self-test image and confirm whether the connection of LED is correct and works normally; Inspect whether VX4 output has a signal and shows blank screen; Inspect whether the mode and parameter of screen configuration are correct; |
| Monitoring port output is abnormal | Check whether there is image input in the input channel and whether it is correctly displayed; LTD. Check whether PIP has been turned on, whether there is signal input in 2 channels and whether it is correctly displayed; Check whether monitoring output is connected correctly and it is not loose; Please confirm whether Monitor supports the output resolution of VX4; Try to cut off the power of equipment and restart it, reset VX4 and operate again; |
| Phase of VGA input offset | Perform VGA Auto AD; |
| PIP display is abnormal | Check whether there is signal input in 2 channels and it is normally displayed; Check PIP and confirm whether parameter setting is normal; |
| Fading is abnormal | Check whether the Switching effect has been enabled; |
| Image Mosaic is abnormal | Check whether the VX4 Image Mosaic switch has been turned on and whether Image Mosaic parameters settings is correct; Check whether input signal source is normal; |
| Sound is abnormal | Check whether the volume settings are appropriate; Check whether the Audio mode setting is correct; Confirm VX4 is well connected to the multifunction card, and the corresponding output port icon on the main interface has been highlighted; confirm whether the audio output mode of the multifunction card is HDMI mode (it is required to connect LCT f or confirmation and setting); |

Documents / Resources

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|  | <p>NOVASTAR VX4S LED Video Controller [pdf] User Manual VX4S, VX4, VX4S LED Video Controller, LED Video Controller, Video Controller, Controller</p> |
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