



INSTRUCTIONS

X16 Controller

USER MANUAL

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1. Safety Information

To prevent personal injury and to protect the device from damage, read and follow these safety precautions.

- **Do not remove the cover**

To avoid personal injury, do not remove the top cover.

- **Only use the power supply and accessories specified by the manufacturer**

The operating voltage of this product is 100V-240V AC. Only use the power cord provided with the product or the power cord that meets the appropriate local rating standards.

- **Prevent function interfaces from contact with charged objects**

This is an electric product. The circuit elements may be damaged if the function interfaces contact charged objects.

- **Grounding**

To avoid electrical shock, ensure that the product is grounded.

- **Electromagnetic Interference**

This is a class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures

- **Environmental Condition**

Use only at altitudes not more than 5000m above sea level.

- **Avoid Moisture**

This product is not waterproof, so avoid contact with liquid or operating the product in a humid environment.

- **Keep the product away from flammable and explosive hazardous substances**

Unpacking and Inspection

After unpacking, checking the items according to the packing list in the box. Please contact the salesman in time if you find the accessories are incomplete.

2. Overview

The X16 is a professional LED display controller. It possesses powerful video signal receiving, splicing, and processing capacities, and supports multiple signal inputs in which the maximum input resolution is 4096×2160@60Hz pixels. It supports multiple digital ports (HDMI, DVI, SDI), and seamless switching between signals. It also supports splicing, broadcast quality scaling, and 7-window display.

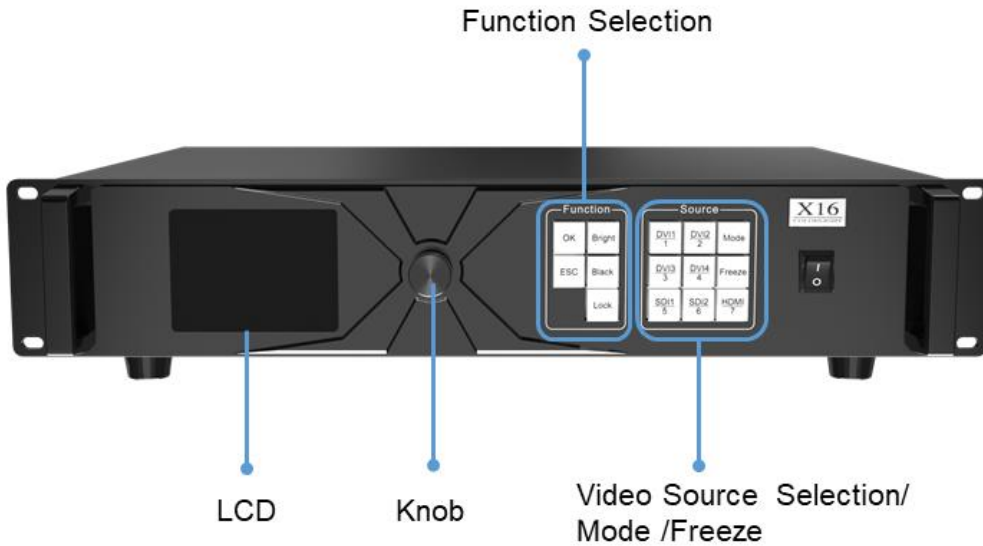
The X16 adopts 16 Gigabit Ethernet outputs. Meanwhile, the X16 is equipped with a series of versatile functions which can provide flexible screen control and high-quality image displays. It can be perfectly applied to high-end rental displays and high-resolution LED displays.

Features

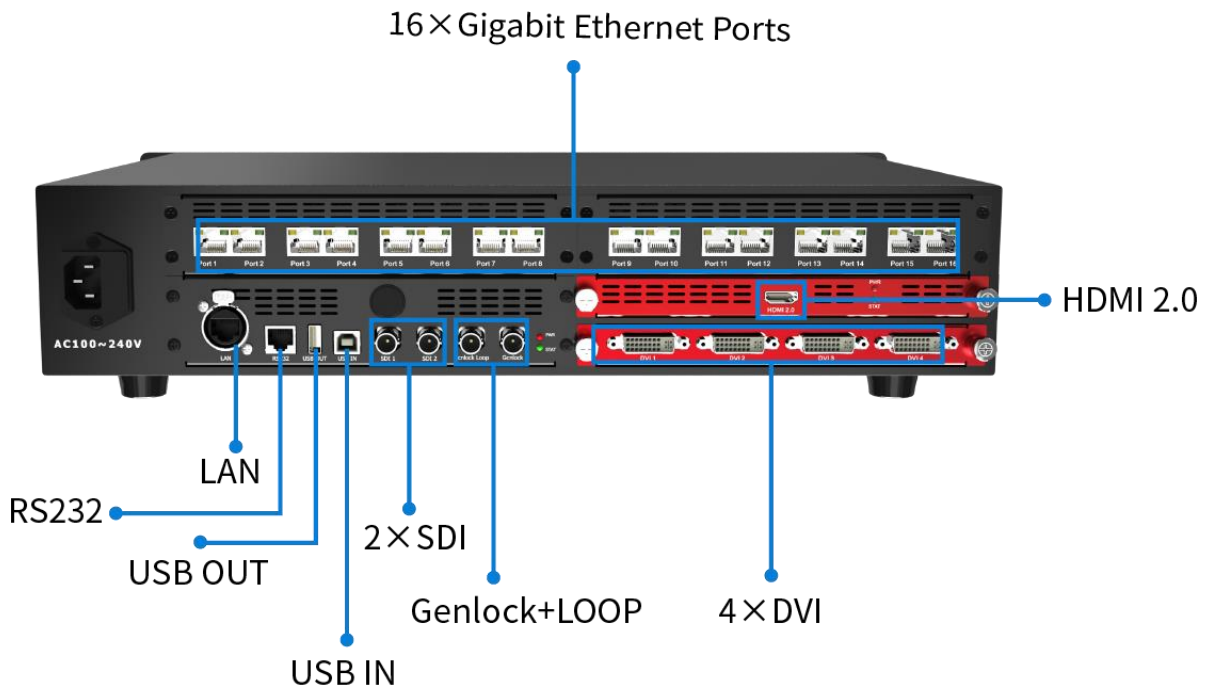
- Supports various digital signal ports, including 1×HDMI 2.0, 4×DVI, and 2×SDI
- Supports input resolutions of up to 4096×2160@60Hz
- Supports arbitrary switching between video sources; the input images can be spliced and scaled according to the screen resolution
- Supports 7-window display, and the location and size can be adjusted freely
- Supports HDCP 2.2
- Dual USB2.0 for high speed configuration and easy cascading among controllers
- Supports brightness and color temperature adjustments
- Supports better gray at low brightness
- Compatible with all receiving cards, multifunction cards, and optical fiber transceivers of Colorlight

3. Appearance

The Front Panel



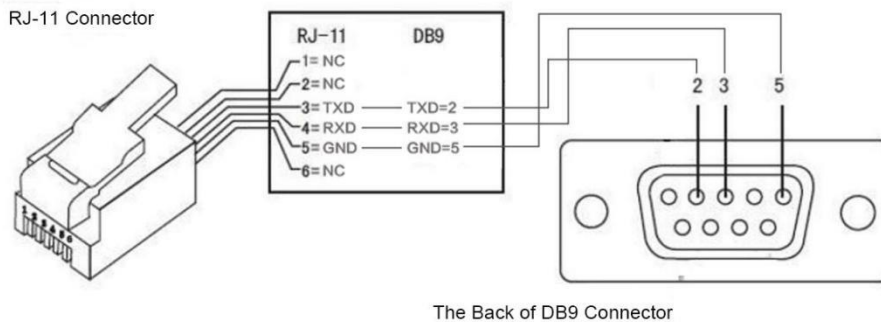
The Back Panel



Input Interface		
1	SDI	2×3G-SDI
2	HDMI	1×HDMI 2.0
3	DVI	4×DVI
Output Interface		
1	Port1-16	RJ45, 16 Gigabit Ethernet outputs, which can be arbitrarily spliced
Controlling Interface		
1	LAN	Network control (communication with PC, or access network)
2	USB IN	USB input, connecting to PC for debugging
3	USB OUT	USB output, for cascading with the next controller
4	Genlock	Genlock signal input, ensuring synchronism of display image
5	Genlock Loop	Genlock synchronous signal loop output
6	RS232	RJ11 (6P6C) *, used to communicate via 3rd party interfaces
Power		
1	AC 100~240V	AC Power Interface

*RJ11 and DB9 Conversion

Circuit Connection Diagram



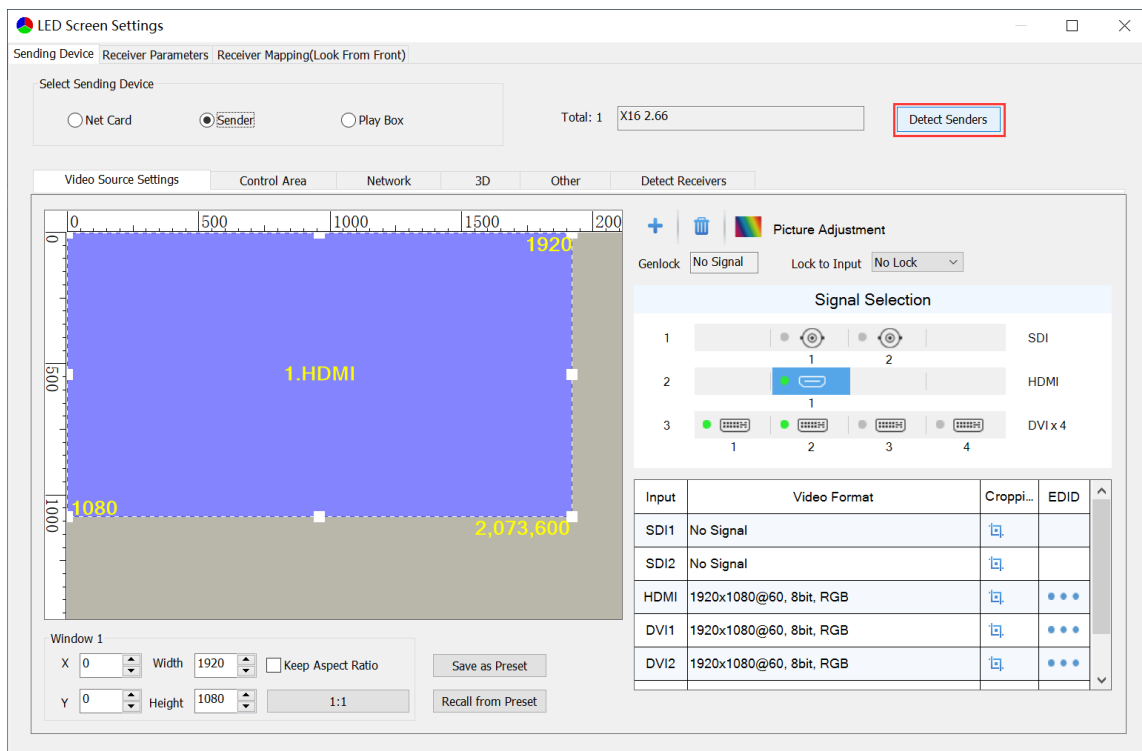
4. Software Operation Instruction

Please make sure the hardware is properly connected before setting parameters, and that all senders and receiver cards can be detected by the software. You can visit www.colorlightinside.com to download LEDVISION installation package.

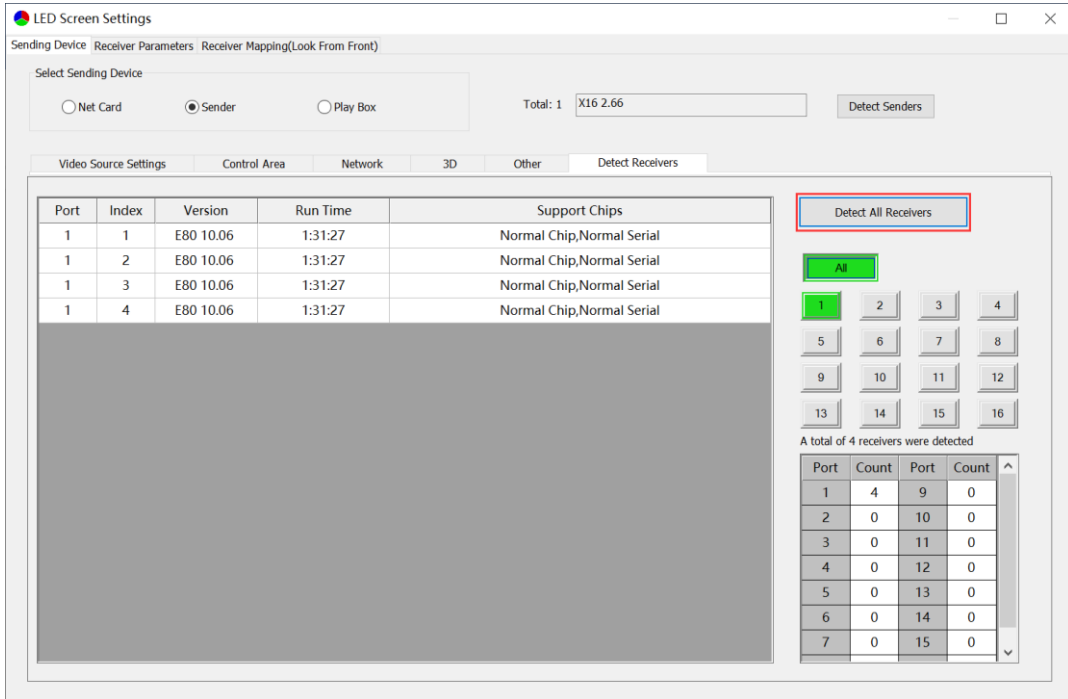
4.1 Detect the Sender and Receiving Card

Open LEDVISION, click **Control**, select **LED Screen Settings** from the drop-down list, and enter the password “168”.

In the pop-up **LED Screen Settings** window, click **Detect Senders** in the upper-right corner of the window, and the number, model and version of the sender are displayed in the field next to **Detect Senders**. When the input of signals is normal, the current status of signals can be displayed in the **Signal Selection** area.

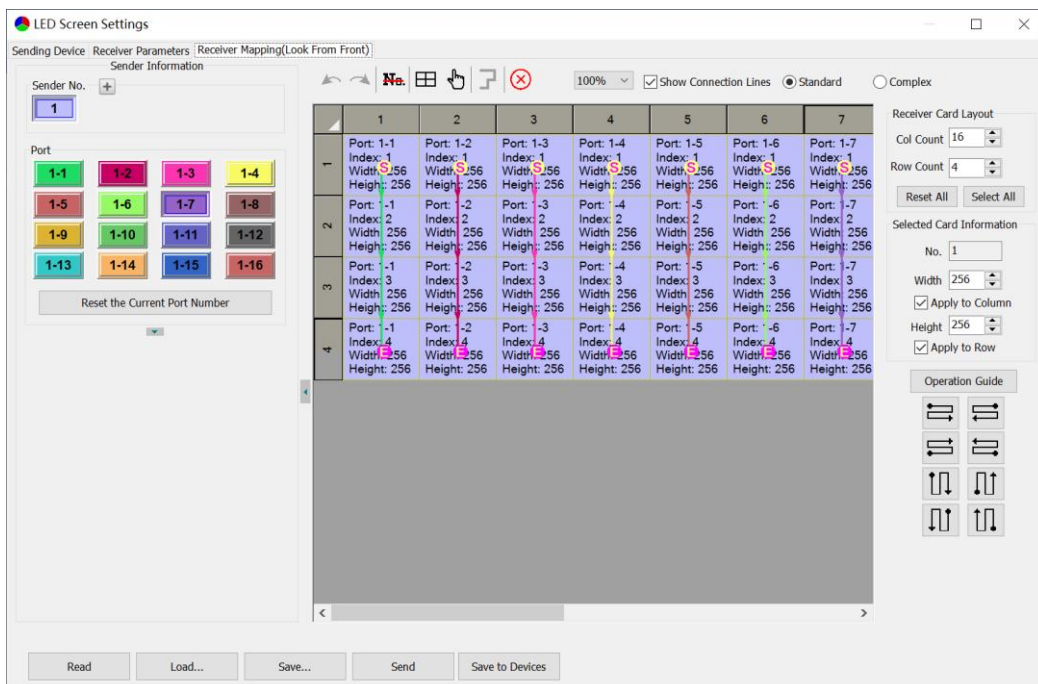


Click **Detect Receivers**. On the **Detect Receivers** sub-page, click **Detect All Receivers**, and the software will automatically acquire information such as the port, index, running time, and supported chips of the receiver card. Please check the corresponding cable if the number of receiver cards are inconsistent with actual status.



4.2 Receiver Mapping Settings

Click **Receiver Mapping** to enter the receiver mapping setting page.

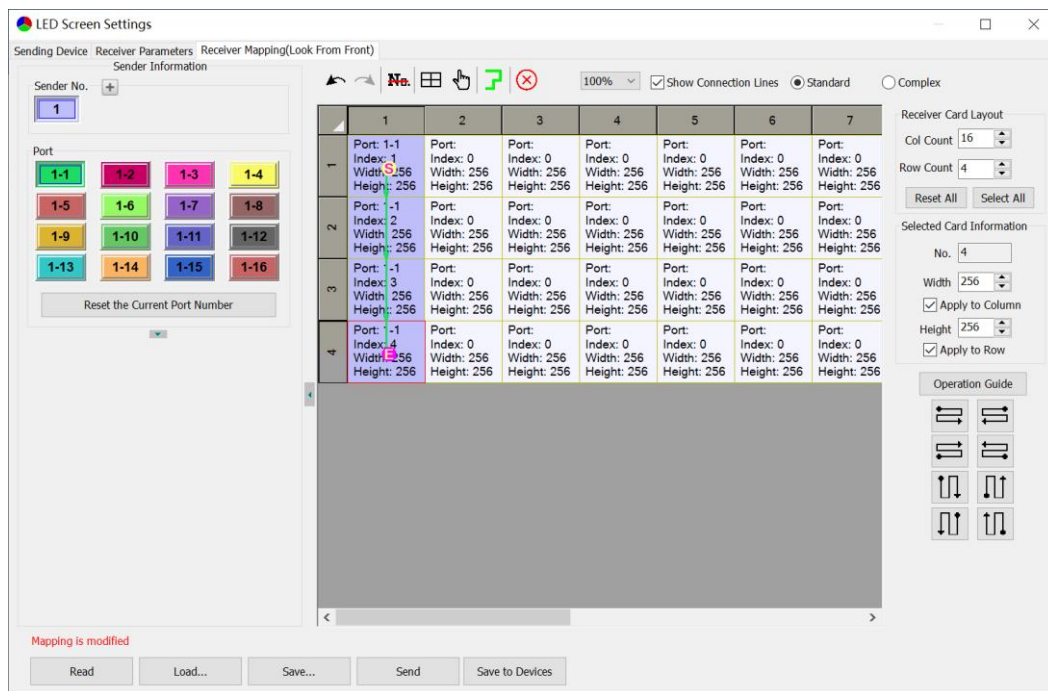


Detailed setting steps are as follows:

4.2.1 Mapping Settings

Select the target Ethernet port on the left side, and then select the corresponding cabinets within the actual control area of the port and set the connection lines in the simulated cabinet area.

In the simulated cabinet area, select the corresponding cabinet of the first receiving card based on the actual connection of the Ethernet port (view from the front), and left-click the cabinet one by one according to actual connecting line, until the last one this Ethernet port controls.



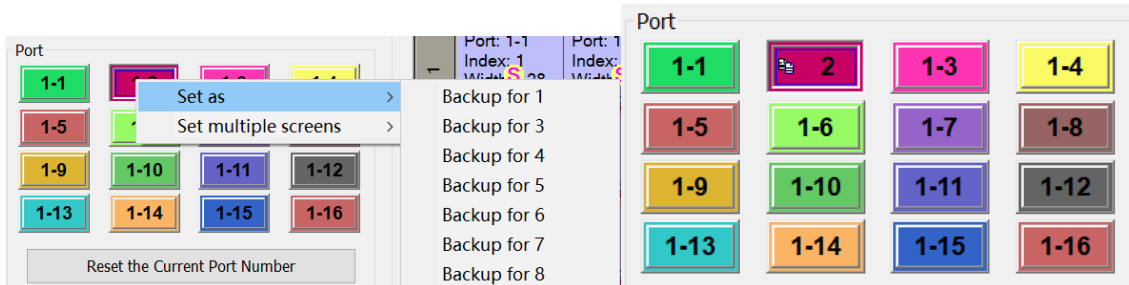
For the cabinets with different specifications (different in dimensions), you can select them and adjust the mapping separately after setting.

4.2.2 Saving Mapping

After successively setting the cabinets each port controls and their mapping, click **Send** and **Save to Devices** at the bottom of the window to send and save the mapping to the current sender and receiving cards.

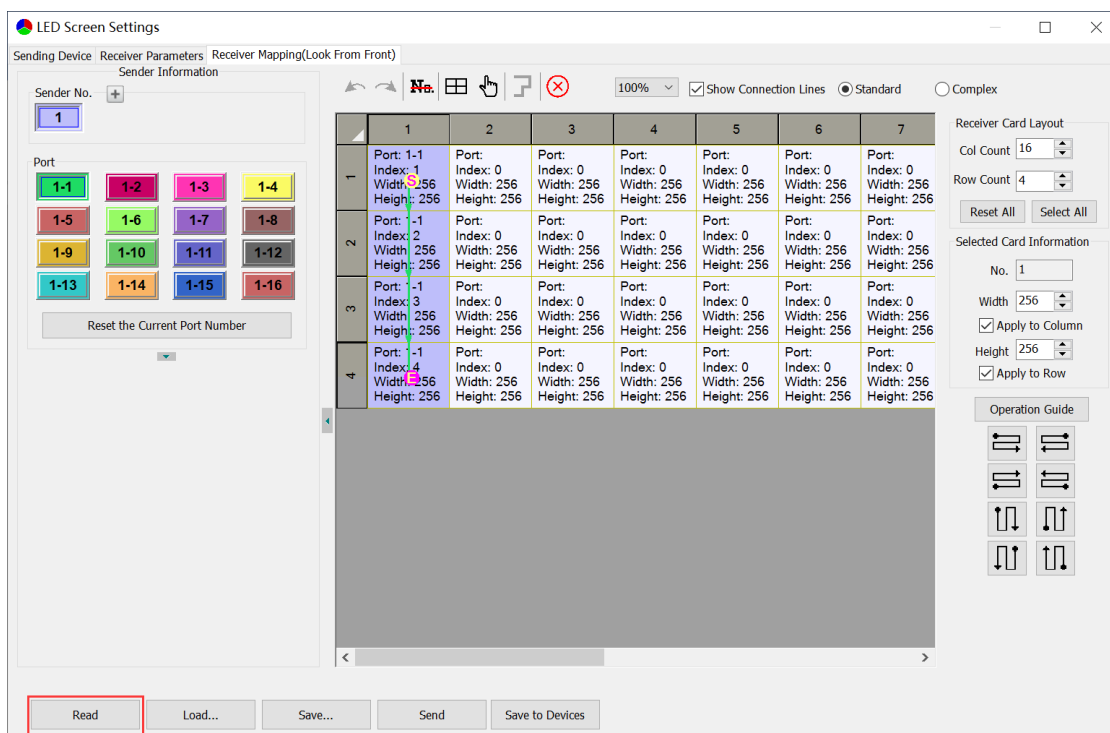
4.2.3 Port Backup Setting

Right-click the sequence number of the backup port, and select the target port that needs a backup. After setting, a backup sign will be displayed besides the sequence number of the backup port.



4.2.4 Read Mapping

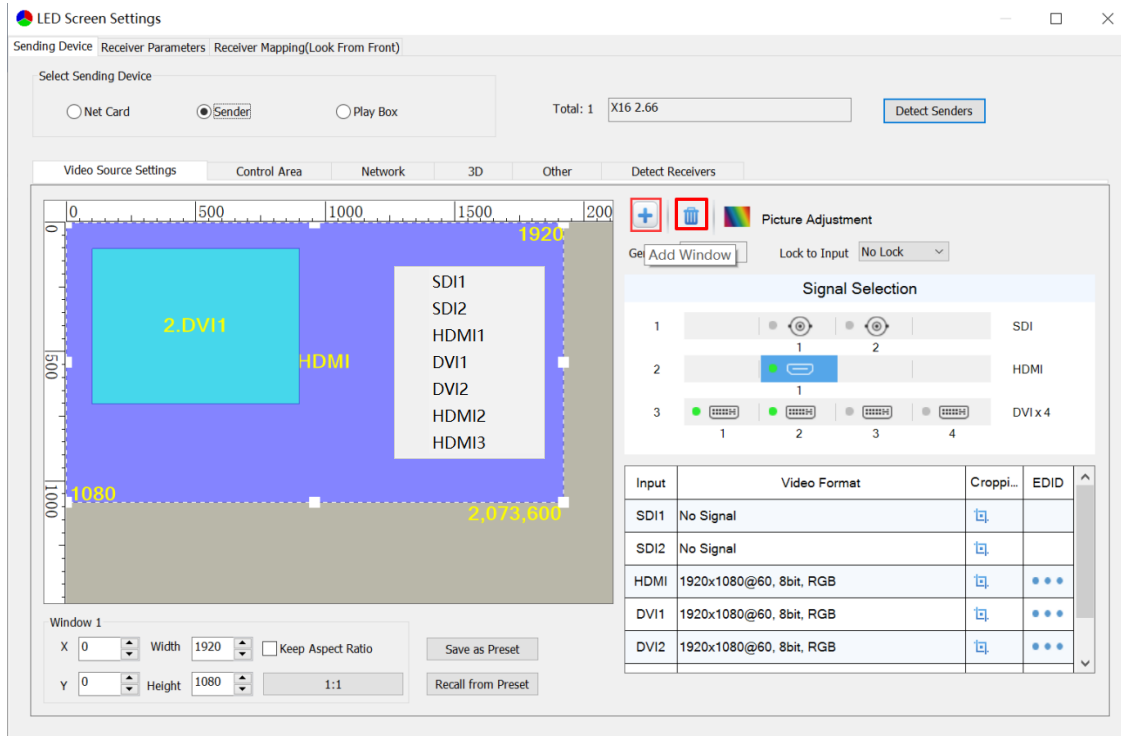
Click **Read** in the lower-left corner of the page, and the mapping parameters of cabinets saved in the receiving cards can be read back.





4.3 Video Source Settings

4.3.1 Multi-window Display

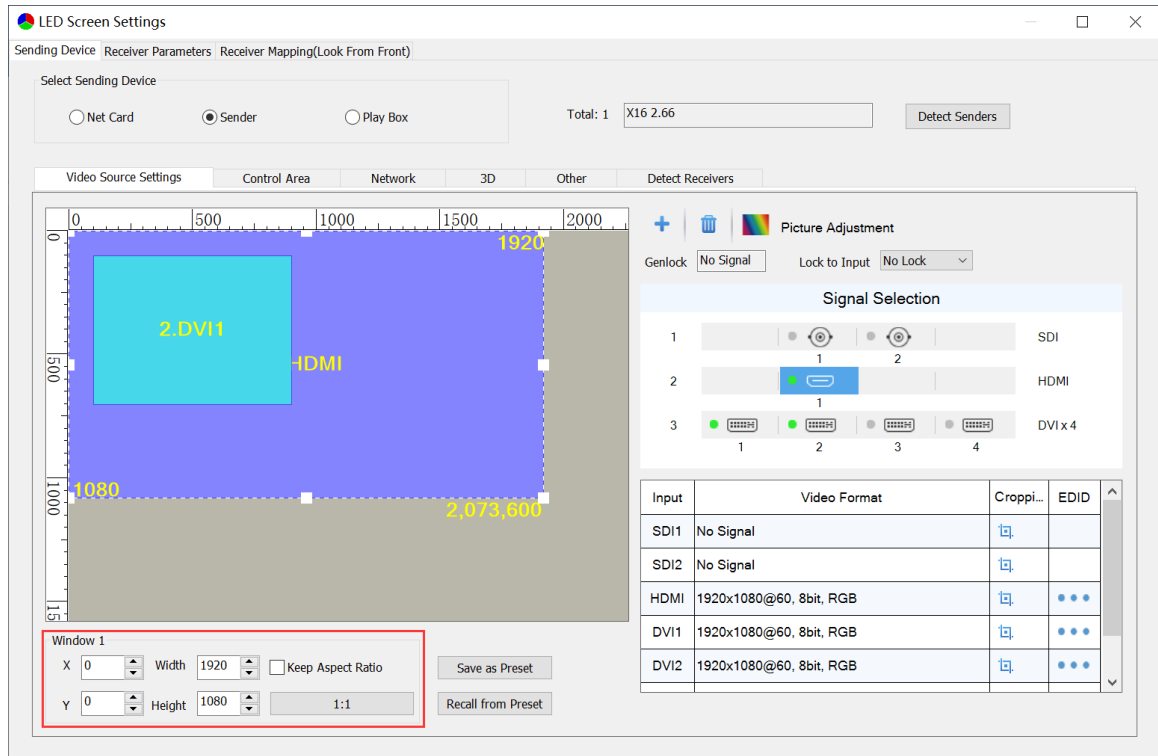
The device supports up to 7-window display. You can add or delete windows based on your own need, and set each window.




Click  to add a window, select the added window and then select other signals as input source, namely adding other windows. Click  to delete all windows.

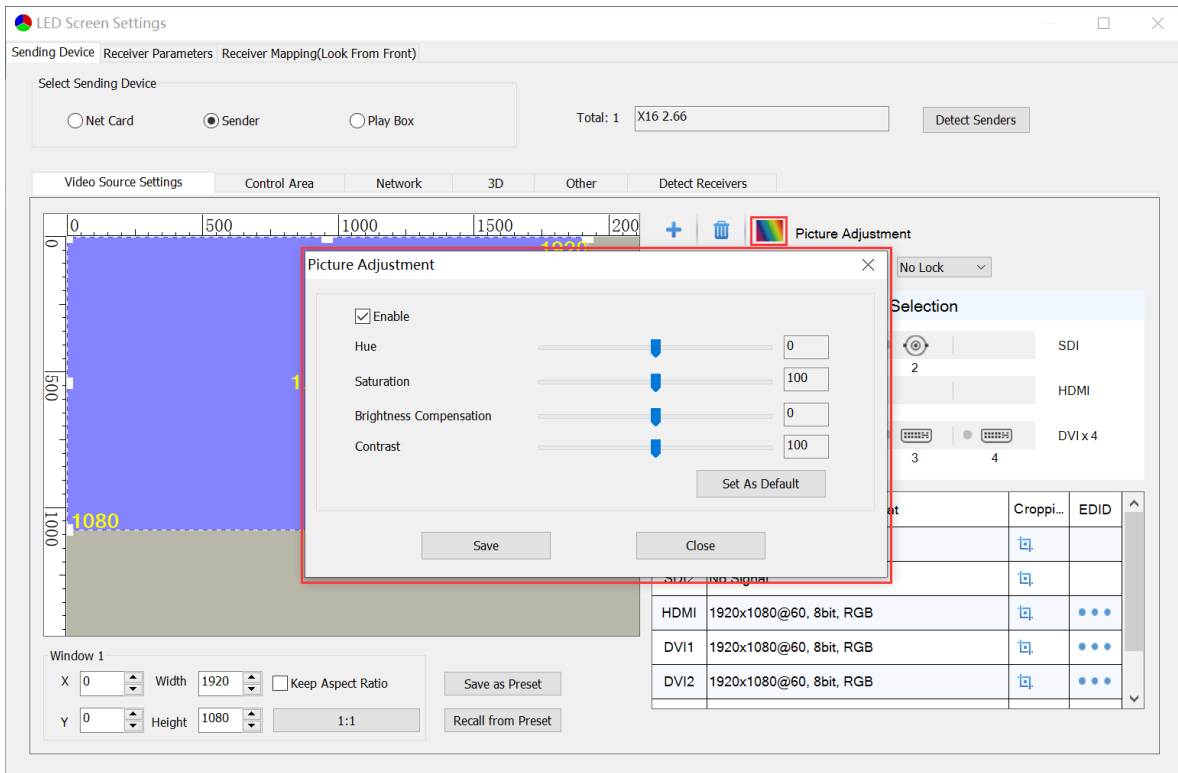
4.3.2 Window Settings

In the lower-left corner of the **Video Source Settings** sub-page, you can set the position and size of the selected window. You can also scale up or scale down the window by dragging the frame of the selected window.



4.3.3 Picture Adjustment

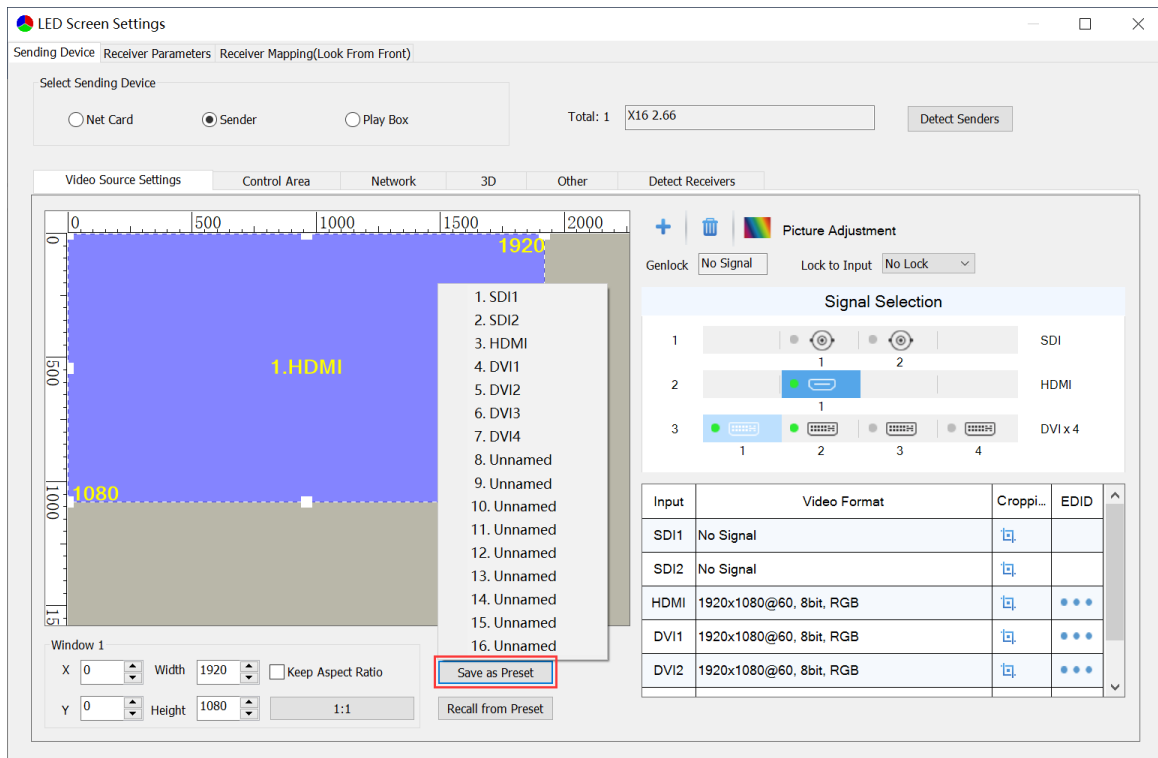
Click  and select the **Enable** check box, and then you can adjust the hue, saturation, brightness compensation and contrast values of the image.



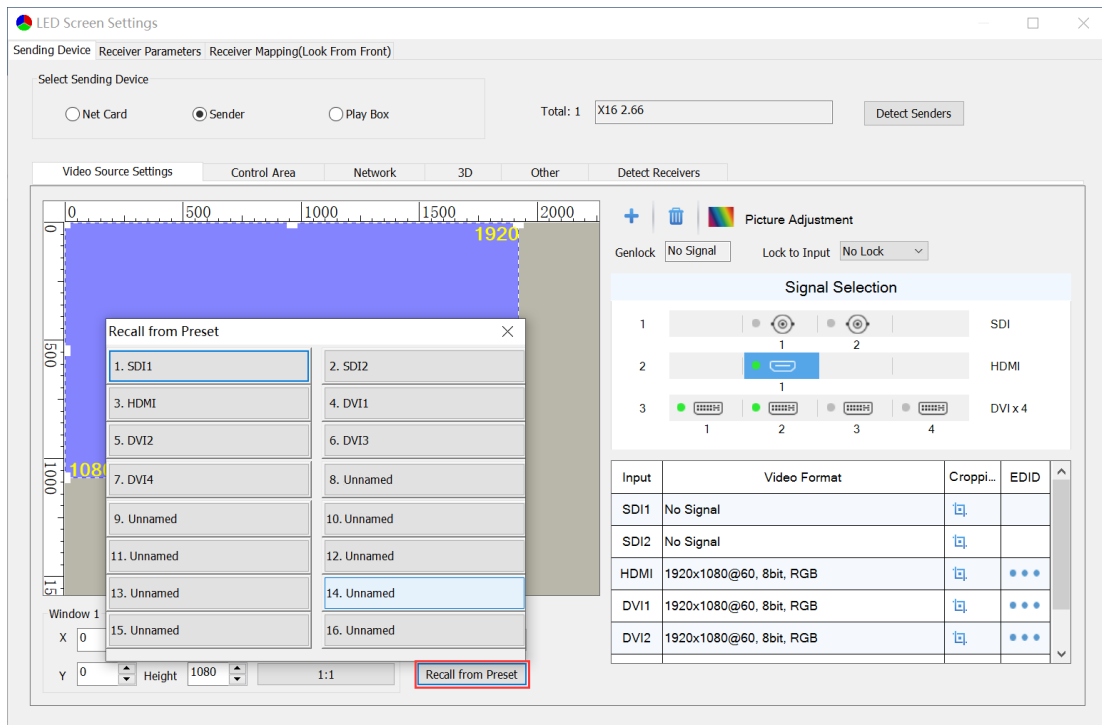
4.3.4 Preset

You can save 16 presets, and every preset includes the following parameter information: scaling, cropping, multi-window display, picture adjustment and 3D. You can also directly load the saved preset parameters to display the image according to your need without needing to set up all the parameters again.

After setting the video source parameters, click **Save as Preset**, select an unnamed preset item and rename it, and then click **OK** to save the preset to the sender.

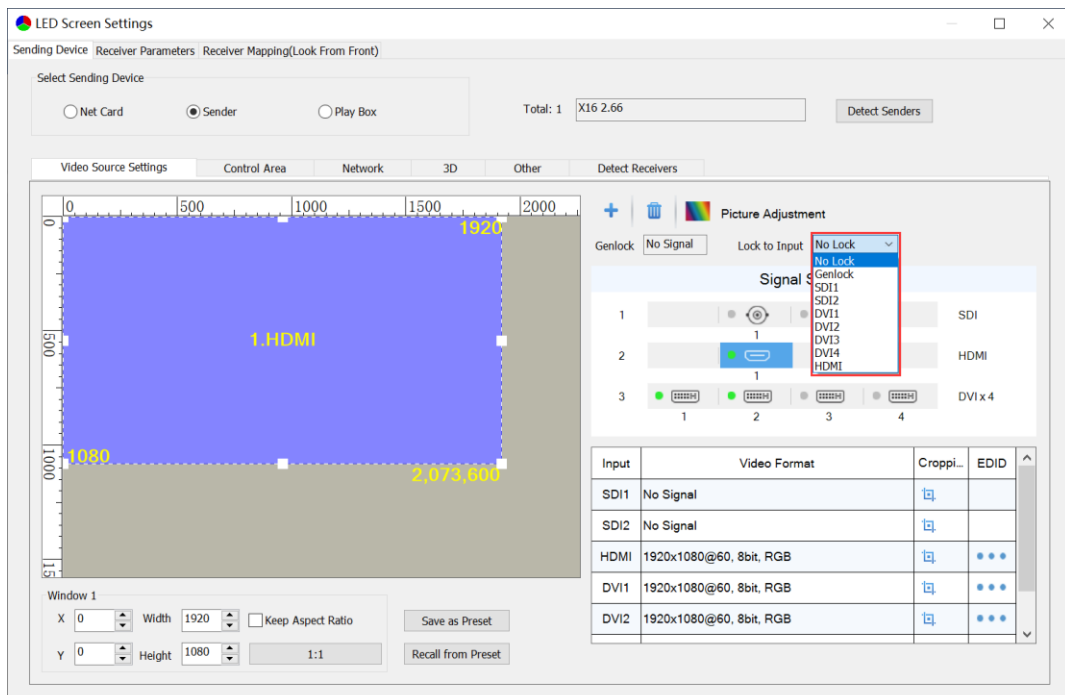


Click **Recall from Preset**, select a preset item, and the screen will display image on the basis of the preset parameter.



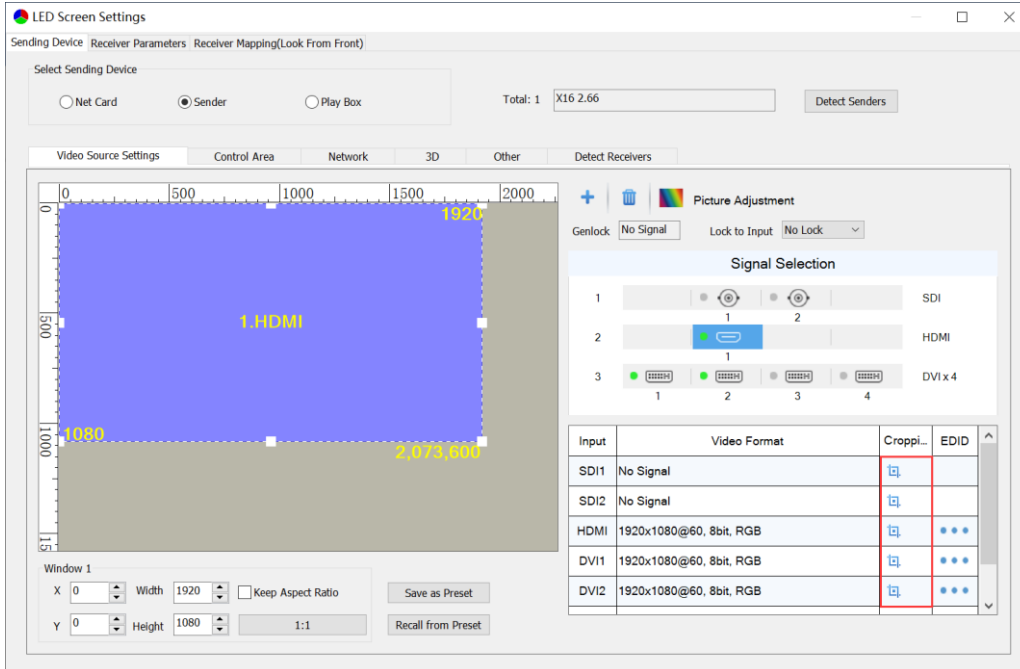
4.3.5 Genlock

Synchronous signal source supports Genlock and every channel of input signals. When there is no specified synchronous signal source or the specified synchronous signal source has no signal, the main image is regarded as synchronous signal source.

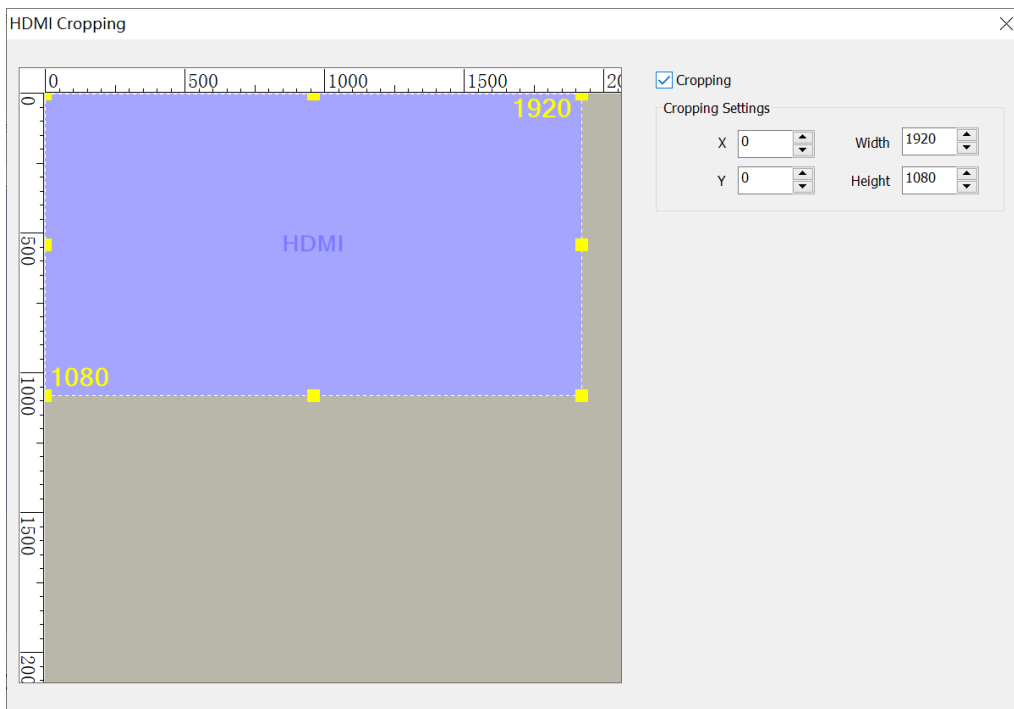


4.3.6 Cropping

In the lower-right corner of the **Video Source Settings** sub-page, click  to enter the cropping setting window.

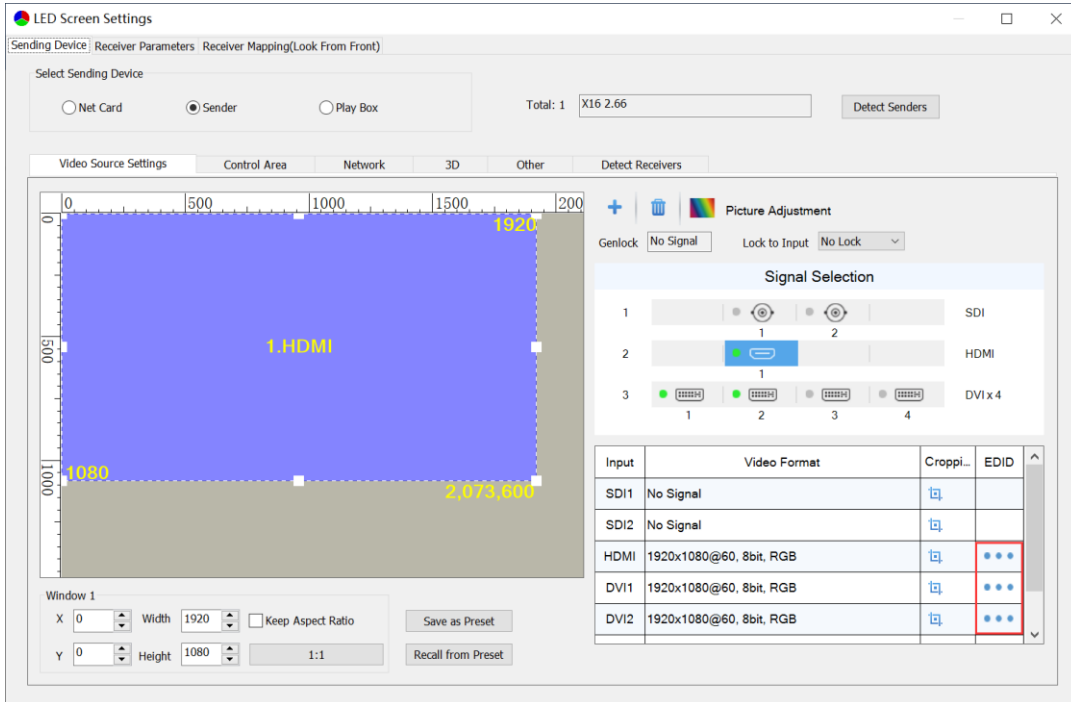


In the cropping setting window, select the **Cropping** check box, and set the row starting point (**X**), the column starting point (**Y**), and the width and height in the **Cropping Settings** area.

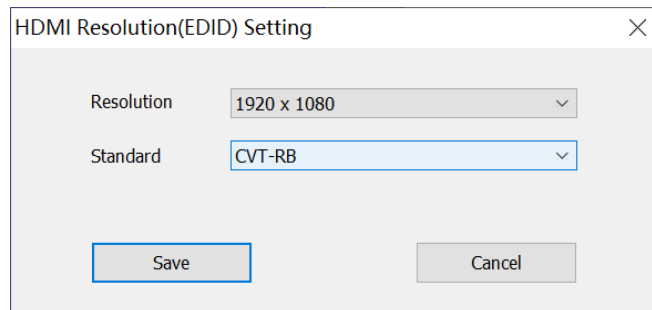


4.3.7 EDID (Resolution)

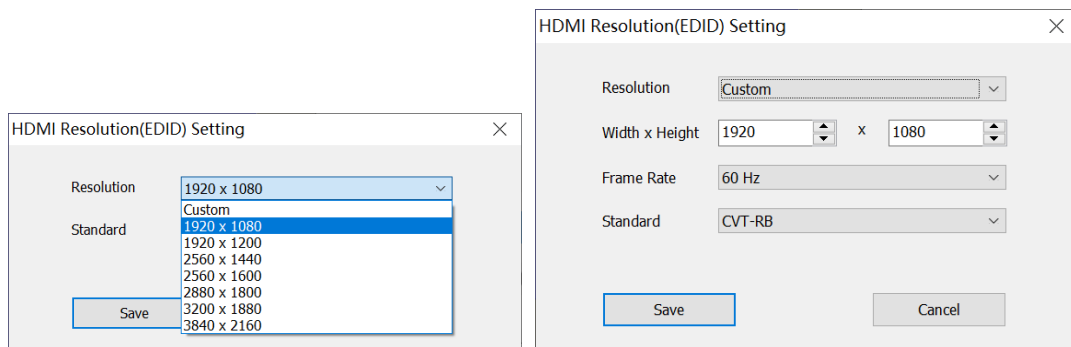
In the lower-right corner of the **Video Source Settings** sub-page, click .



In the **Resolution (EDID) Setting** dialog box, the resolution of the current sender is displayed by default.



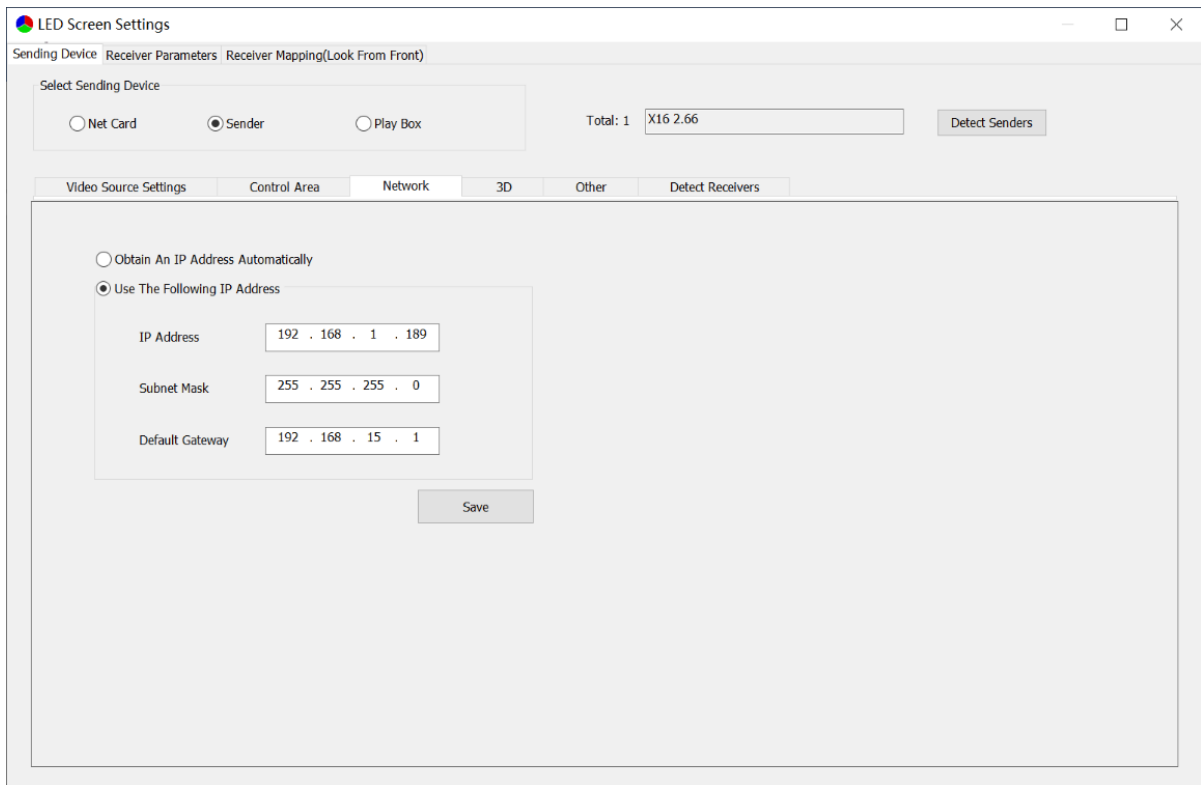
Click the dropdown button. From the resolution list, you can select a conventional resolution, or select **Custom** and set the width, height, frame rate and standard of the customized resolution.



After setting, click **Save**.

4.4 Network

Click Network. On the **Network** sub-page, click **Obtain an IP Address Automatically**, and the device will automatically obtain the IP address. Or you can click **Use the Following IP Address**, and then manually enter the IP address, subnet mask and default gateway. After setting, click **Save**.

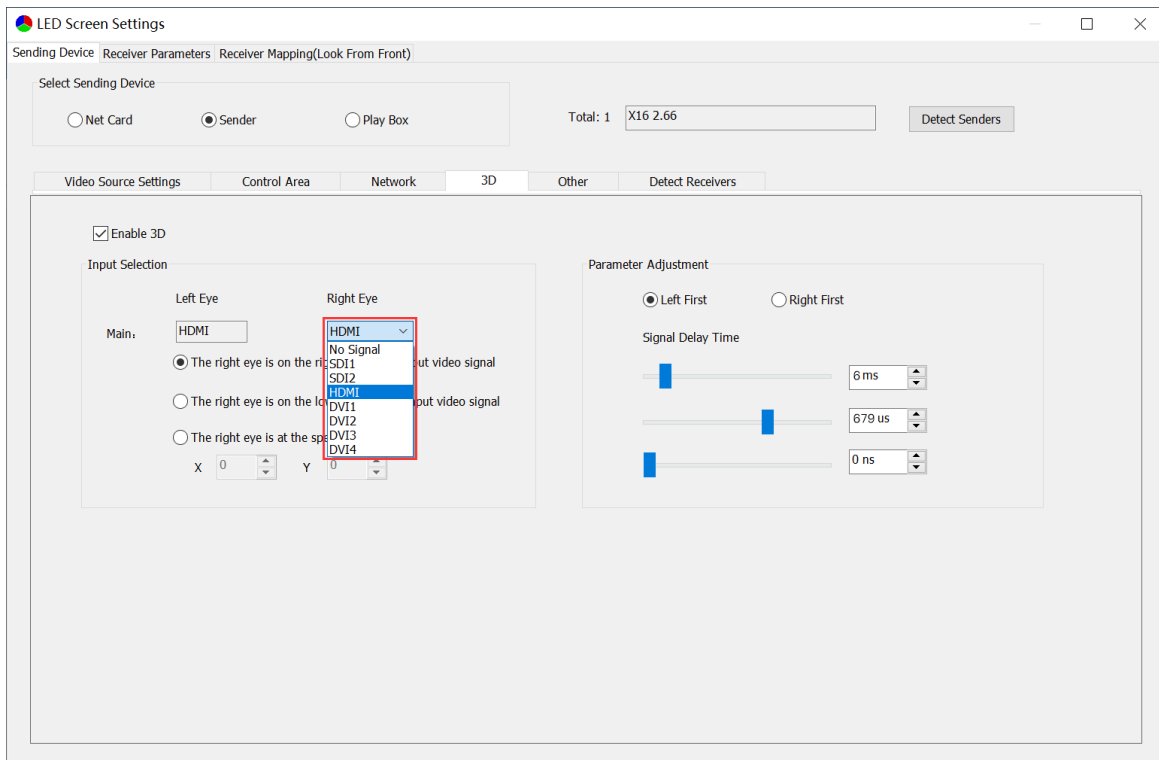


The screenshot shows the 'LED Screen Settings' application window. The 'Network' tab is selected. Under 'Select Sending Device', 'Sender' is chosen. The 'Total' field shows '1' and 'X16 2.66', with a 'Detect Senders' button. The 'Network' sub-tab is active, showing two options: 'Obtain An IP Address Automatically' (unselected) and 'Use The Following IP Address' (selected). The 'Use The Following IP Address' section contains three input fields: 'IP Address' (192 . 168 . 1 . 189), 'Subnet Mask' (255 . 255 . 255 . 0), and 'Default Gateway' (192 . 168 . 15 . 1). A 'Save' button is located at the bottom right of the network settings area.

4.5 3D

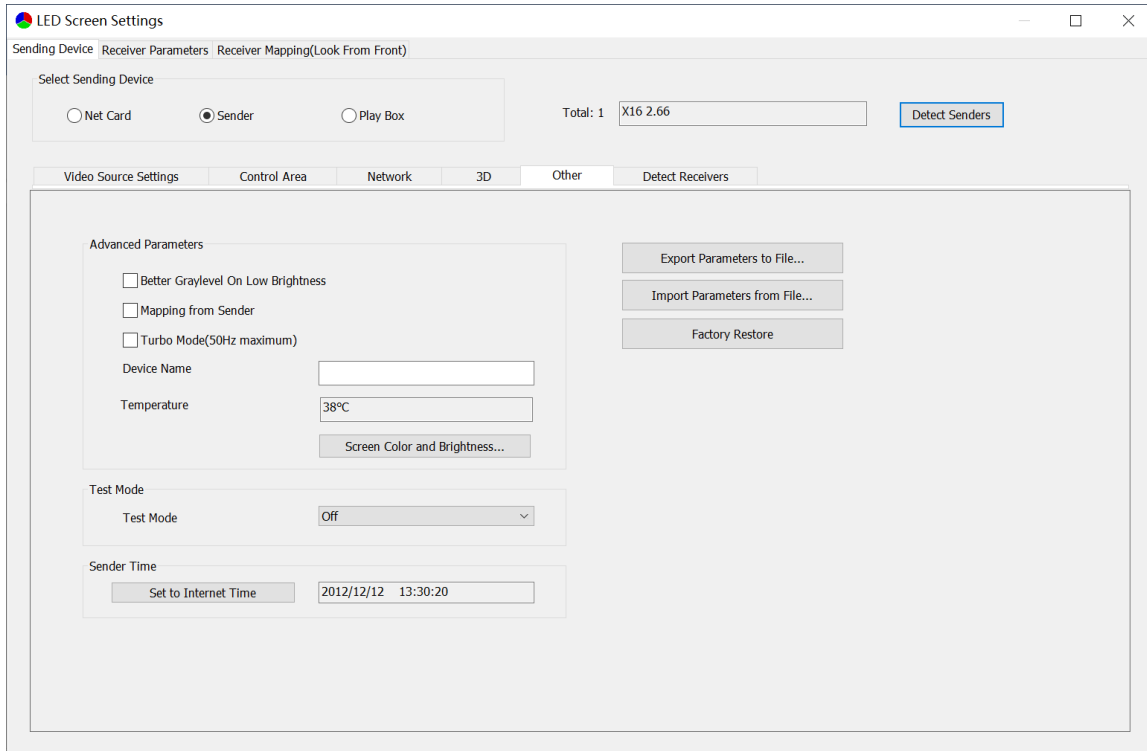
X16 controller supports 3D display on ordinary LED screens. After detecting the X16 controller, click **3D** to enter the **3D** sub-page, on which you can set 3D.

On the page, select the **Enable 3D** check box, and select the same signal from the **Left Eye** and **Right Eye** list, and then set **Parameter Adjustment** to achieve good display effect.



4.6 Other

On the **Other** sub-page, you can select or clear the **Better Graylevel on Low Brightness**, **Mapping from Sender** and **Turbo Mode (50Hz maximum)** check box, modify the device name, and switch the test mode based on your specific need.



5. LCD Operation Instruction



5.1 Operation Instruction

Knob/OK:

- In the main interface, press the knob/**OK** to enter the operation menu;
- On the operation menu, rotate the knob to scroll to a menu item, press the knob/**OK** to select the current item or enter the submenu;
- Rotate the knob to adjust parameters after selecting the menu item with the parameter and press the knob/**OK** to save the parameter.

ESC: Exit the current menu or operation.

Bright: Press the key and rotate the knob to adjust screen brightness, and then press the knob/**OK** to confirm the current brightness.

Black: Blackout.

Lock: Lock all the keys of the front panel. You can press it again and follow the directions to press **OK** to exit Lock mode.

Mode: Switch to the interface of fast loading preset parameters.

Freeze: Freeze the image.

DVI1/DVI2/DVI3/DVI4/SDI1/SDI2/HDMI: Video source selection keys, which function as number selection keys in the mode selection.

5.2 Main Interface

After starting up the X16 controller, the main interface of the LCD display is as follows:



First row: Company logo

Second row: Signal source, Brightness

Third and fourth row: Connection status of signal source and GenLock

Fifth row: Connection status of Ethernet ports

Sixth row: Product name, IP address, Temperature

5.3 Menu Operation

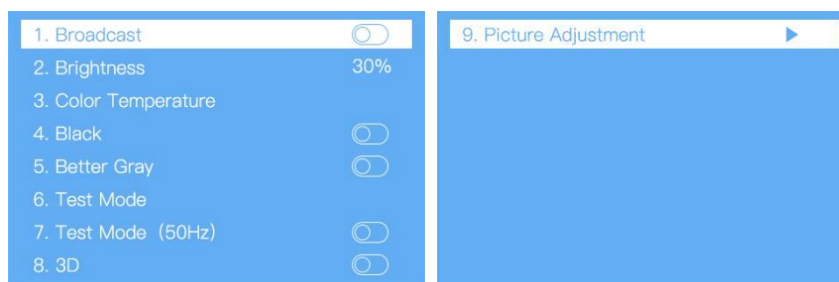
Press the knob/**OK** to enter the operation menu, which includes 11 operation items:

Display Setting, EDID Setting, Cropping Setting, Preset Setting, Output Setting, Output Shift, Lock to Input, Tile Mapping, Network Setting, Language Setting and System Setting.



5.3.1 Display Setting

Rotate the knob and select **Display Setting** to enter the **Display Setting** submenu.



Broadcast

Press the knob/**OK** to turn on or off the **Broadcast** function. If the broadcast function is turned on, the setting of the menu items in this submenu (**Brightness, Color Temperature, Black, Better Gray, Test Mode, Test Mode(50Hz), 3D**) will be synchronously sent to the devices cascaded with this controller.



Brightness

Select **Brightness**, rotate the knob to change the brightness, and then press the knob/**OK** again to save the brightness.



Color Temperature

In the **Color Temperature** menu, you can select **Enable** and press the knob/**OK** to turn the color temperature adjustment function on or off; select **Color Temperature** and rotate the knob to change the value of color temperature; select **Reset to Default** to reset the value of color temperature as 6500.



Black

Press the knob/**OK** to turn on or off the LED screen.

Better Gray

Press the knob/**OK** to turn on or off the **Better Gray** function.

Test Mode

In the **Test Mode** menu, you can select a test mode.



Test Mode (50Hz)

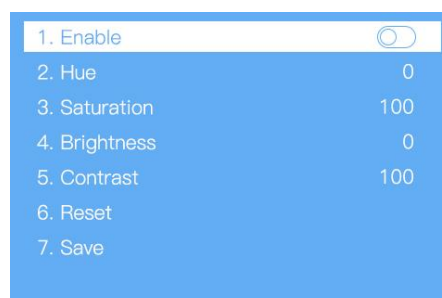
Press the knob/**OK** to turn on or off **Test Mode (50Hz)**. If **Test Mode (50Hz)** is turned on, the frame rate of input signals will change from 60Hz to 50 Hz, and the loading capacity will change from 8.88 million to 10.88 million.

3D

Press the knob/**OK** to turn on or off **3D**.

Picture Adjustment

In the **Picture Adjustment** menu, you can select **Enable** and press the knob/**OK** to turn the picture adjustment function on or off; select **Hue** and rotate the knob to change the value of hue; select **Saturation** and rotate the knob to change the value of saturation; select **Brightness** and rotate the knob to change the value of brightness; select **Contrast** and rotate the knob to change the value of contrast; select **Reset** to reset the hue value as 0, saturation value as 100, brightness value as 0, and contrast value as 100; select **Save** to save the changed value of hue, saturation, brightness and contrast.



5.3.2 EDID Setting

Rotate the knob and select **EDID Setting** to enter the **EDID Setting** submenu that displays different options of signals corresponding to the combination of daughter boards. (Take HDMI daughter board and DVI daughter board as an example).



In the EDID setting submenu of **HDMI** and **DVI1/2/3/4** (take **HDMI** as an example), you can rotate the knob and select a conventional resolution to save the selected resolution to the sender, or select **Custom** and rotate the knob to adjust the width, height and frame rate, and then select **Save** to save the setting in the sender.



5.3.3 Cropping Setting

Rotate the knob and select **Cropping Setting** to enter the **Cropping Setting** submenu that displays different options of signals corresponding to the combination of daughter boards. (Take HDMI daughter board and DVI daughter board as an example).

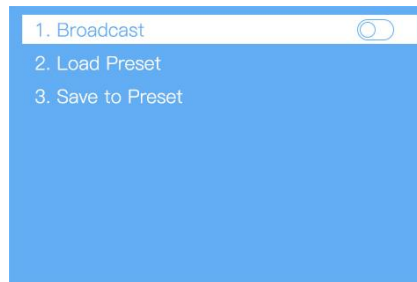


In the cropping setting submenu of **HDMI** or **DVI1/2/3/4** or **SDI1/2**, press the knob/**OK** to turn the cropping function on or off. If **Enable** has been switched on, you can rotate the knob to set the row starting point (**X**), the column starting point (**Y**), and the width and height of the signal image, and then select **Save**.



5.3.4 Preset Setting

Rotate the knob and select **Preset Setting** to enter the **Preset Setting** submenu.



In the submenu, you can turn the **Broadcast** function on or off, and save 16 preset parameters, every one of which includes the following parameter information: scaling, cropping, multi-window display, picture adjustment and 3D. You can also directly load the saved preset parameter to display the image based on your specific need without the need to setting the parameters of video sources again. After restoring factory settings, 4 preset parameters have been preset in the controller.



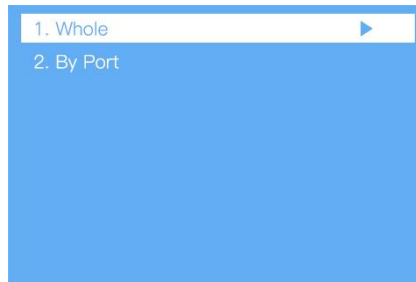
5.3.5 Output Setting

Rotate the knob and select **Output Setting** to enter the **Output Setting** submenu. Select **Number Of Pictures** and rotate the knob to set the number of pictures from 1 to 7; Select **Main** or **PIP** to enter its output setting submenu, and rotate the knob to set the input signal of the output picture and adjust the row starting point (**X**), the column starting point (**Y**), and the width and height of the output picture. After setting, select **Save**.

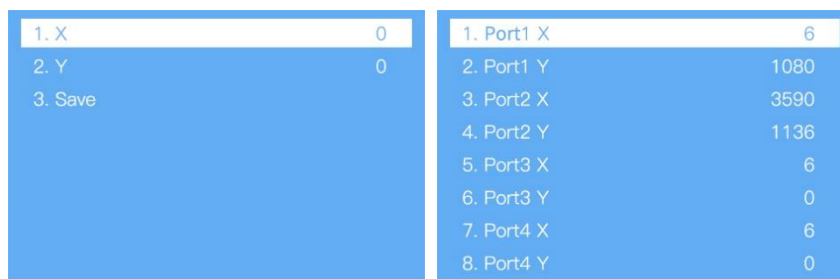


5.3.6 Output Shift

Rotate the knob and select **Output Shift** to enter the **Output Shift** submenu.



Output shift includes two selections: **Whole** and **By Port**. On the submenu of **Whole**, you can rotate the knob to set the row starting point (**X**) and column starting point (**Y**) of the whole image and save the setting; On the submenu of **By Port**, you can respectively set the row starting point (**X**) and column starting point (**Y**) of the image of the 16 Ethernet ports and save the setting.



9. Port5 X	6	17. Port9 X	6
10. Port5 Y	0	18. Port9 Y	0
11. Port6 X	6	19. Port10 X	3041
12. Port6 Y	0	20. Port10 Y	1561
13. Port7 X	6	21. Port11 X	6
14. Port7 Y	0	22. Port11 Y	0
15. Port8 X	6	23. Port12 X	6
16. Port8 Y	0	24. Port12 Y	0
25. Port13 X	6	33. Save	
26. Port13 Y	0		
27. Port14 X	3041		
28. Port14 Y	1561		
29. Port15 X	6		
30. Port15 Y	0		
31. Port16 X	6		
32. Port16 Y	0		

5.3.7 Lock to Input

When several controllers are cascaded with each other, **Lock to Input** is necessary to ensure the synchronization of the video displays. Rotate the knob and select **Lock to Input** to enter the submenu. On the submenu, you can select a sync signal source.

1. No GenLock		9. SDI2
2. Genlock	✓	
3. HDMI		
4. DVI1		
5. DVI2		
6. DVI3		
7. DVI4		
8. SDI1		

5.3.8 Tile Mapping

Rotate the knob and select **Tile Mapping** to enter the **Tile Mapping** submenu.

1. From Sender	<input checked="" type="checkbox"/>
2. Set By Port	<input type="checkbox"/>

In the submenu, press the knob/**OK** to set the sender as the connection source. Then select **Set by Port** to enter the submenu, in which you can choose the Ethernet port from 1 to 16 that needs setting mapping, and set the row offset value(X) and column offset value(Y) of the port, and the width, height, row number, column number and link type of the

corresponding cabinets. Finally select **Save** to save the mapping.



5.3.9 Network Setting

You can choose automatically obtaining IP address or manually setting static IP address. Enter the **Network Setting** submenu, and press the knob/**OK** to turn the **DHCP** function on or off, or select **IP Setting** to enter the submenu, in which you can set the IP address, subnet and gateway via the knob.



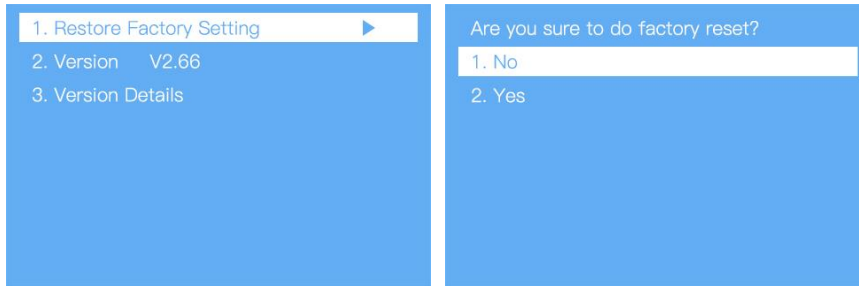
5.3.10 Language Setting

In the **Language Setting** menu, you can switch languages.



5.3.11 System Setting

In the **System Setting** menu, you can restore factory settings and view the current version and its details.





Visual Future

Colorlight (Shenzhen) Cloud Technology Co., Ltd.

www.colorlightinside.com