Colorlight



INSTRUCTIONS

X4e Controller

USER MANUAL

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1. Overview

X4e controller is a professional control system and video processing equipment specially designed for LED engineering applications. It equips various video signal interfaces, supports high-definition digital ports (SDI, HDMI, DVI, DP), and seamless switching between signals can be achieved; it supports broadcast quality scaling and multi-pictures display.

X4e adopts 4 Gigabit Ethernet outputs, and it supports LED display of 4096 pixels in maximum width or 2560 pixels in maximum height. Also, X4e equips a series of versatile functions which provide flexible screen control and high-quality image display, it has significant advantages in LED engineering applications.

Features:

- Support various digital signal ports, including 2×SDI, 1×DP, 1×HDMI (with loop), 1×DVI (with loop)
- Support input resolution up to 1920*1200@60Hz
- Loading capacity: 2.6 million pixels,
  Maximum Width: 4096 pixels, Maximum Height: 2560 pixels
- Support arbitrary switching and scaling of video source
- Support three-picture display, the location and size can be adjusted freely
- Support HDCP1.4
- Dual USB2.0 for high speed configuration and easy cascading among controllers
- Support brightness and chromaticity adjustment
- Support improved gray-scale at low brightness
- Compatible with all receiving cards, multifunction card, optical fiber transceivers of Colorlight

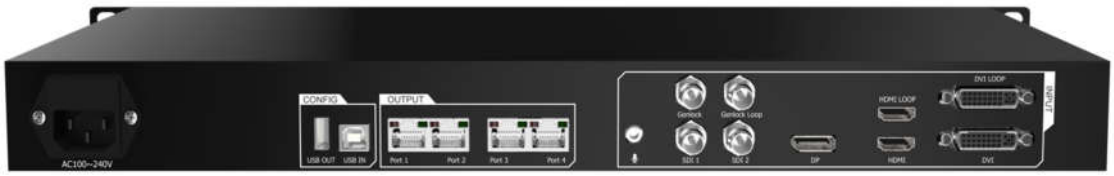
2. Appearance

Front Panel



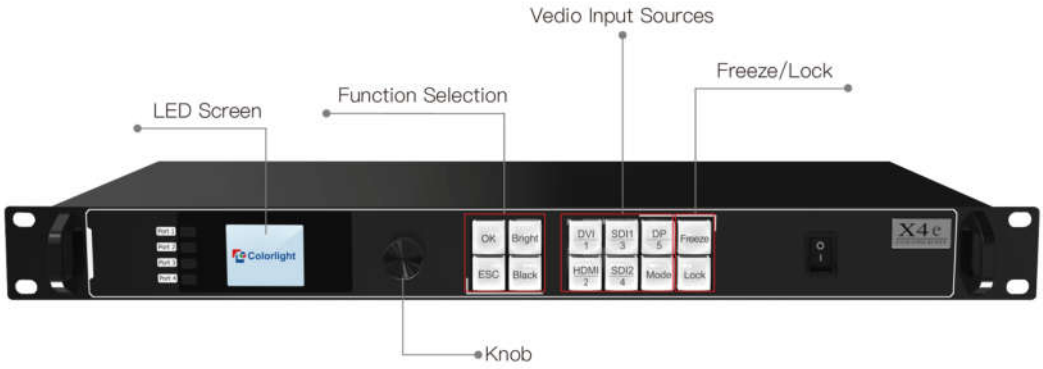
No.	Name	Function
1	1.8-inch LCD	Display operation menu and system information
2	Knob	Turning knob to select or adjust
3	Function Keys	OK: Enter key ESC: Escape current operation or selection Bright: Brightness option Black: Blank screen Mode: Output mode selection of images Freeze: Freeze screen Lock: Lock keys
4	Selection Keys	DVI/HDMI/SDI 1/SDI 2/DP: Video source selection
5	Power Switch	Power switching for equipment

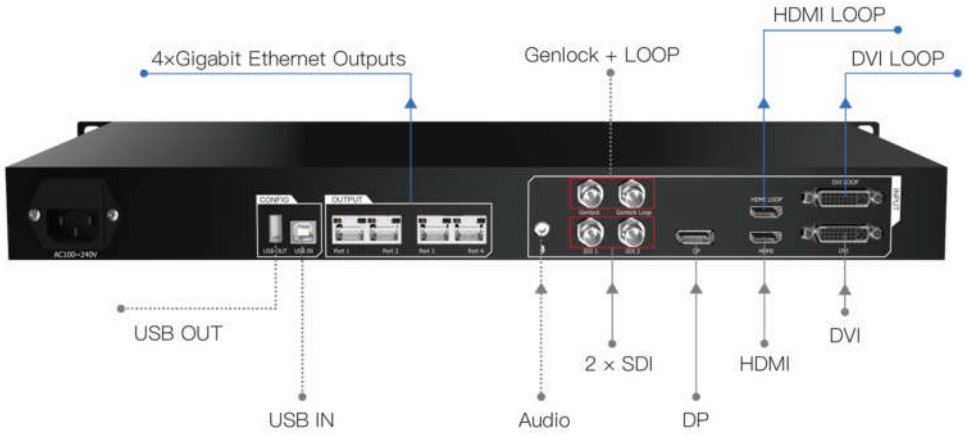
Back Panel



Input Interface		
1	SDI	2 SDI inputs, 1080P
2	DP	DP input, VESA Standard, support input resolution up to 1920*1200@60Hz
3	HDMI	HDMI input (with loop), EIA/CEA-861 Standard, support 1920*1200@60Hz, support HDCP
4	DVI	DVI input (with loop), VESA Standard (support 1920*1200@60Hz), support HDCP
5	AUDIO	Audio input, input audio signal and transmit to the multifunction card
Output Interface		
1	Port1/2/3/4	RJ45, 4 Gigabit Ethernet outputs
Controlling Interface		
1	USB OUT	USB output, cascading with next controller
2	USB IN	USB input, which connects with PC to configure parameters
3	Genlock	Genlock signal input ensures synchronism of display image
4	Genlock Loop	Genlock synchronous signal loop output
Power		
1	AC 100~240V	AC Power Interface

3. Signal Connection

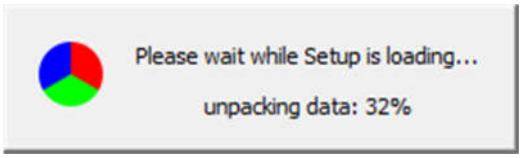




4. LEDVISION Installation

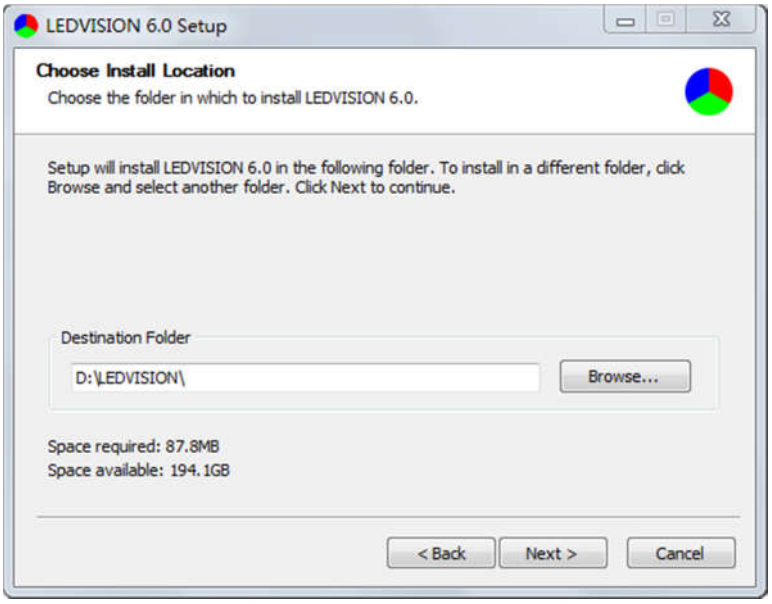
Please download the installation package of the LEDVISION software from Colorlight's official website **www.colorlightinside.com**, and complete the installation according to the diagrams shown below.

1. Run the software package, and select **[English]** for installer language. Click **[OK]** to move on.

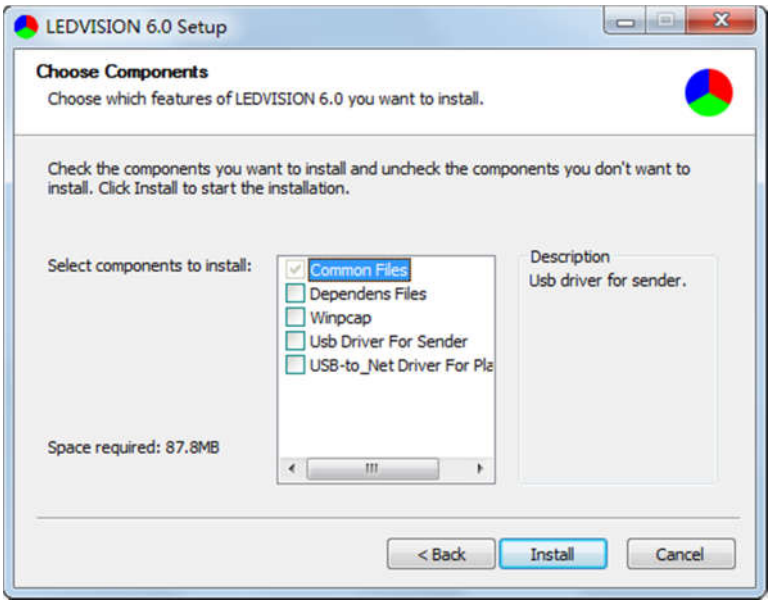




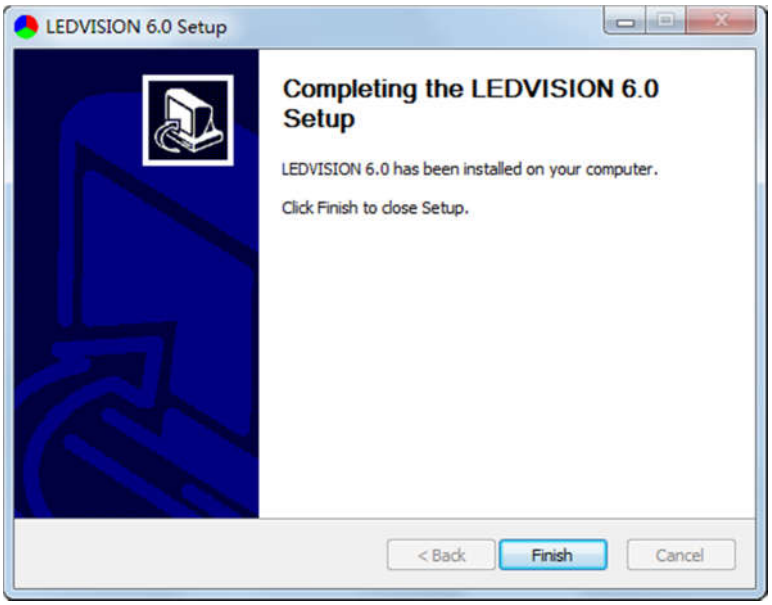
2. After selecting a language, an installation wizard like below will appear, click **[Next]**.
Then choose installation location, click **[Browse]** to change default target location, then click **[Next]** after completing.



Choose components according to your own computer status, click **[Install]** to complete.



After the installation is complete you are ready to use LEDVISION.

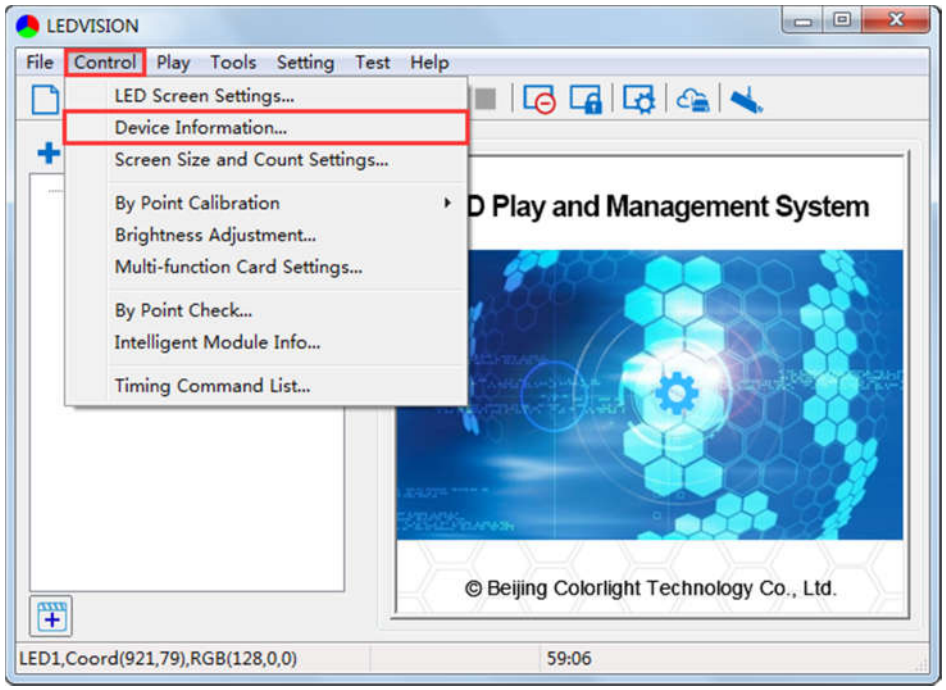


5. Parameter Configuration

Please make sure the correctness of the hardware connection before setting, use LEDVISION to detect sender and all receiving cards.

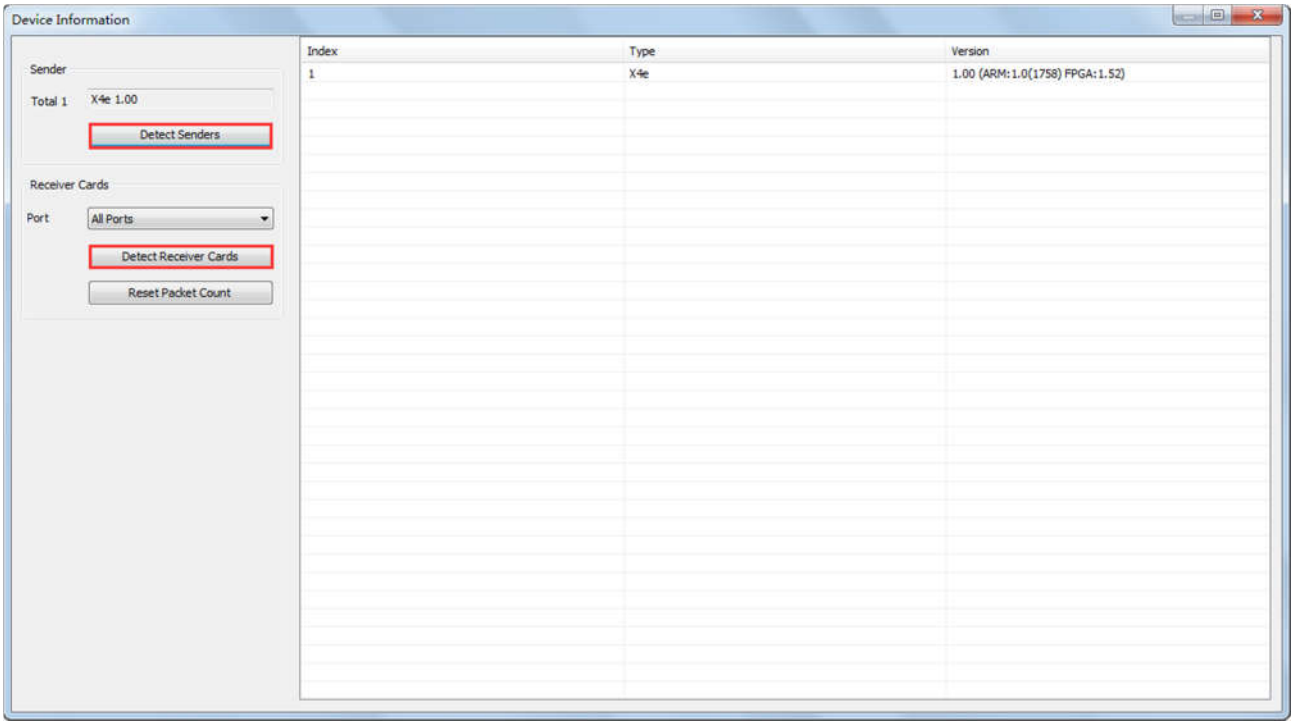
5.1 Detect Sender and Receiving Card

1. Run LEDVISION, click **[Control]**—**[Device Information]** to enter the Device Information window.



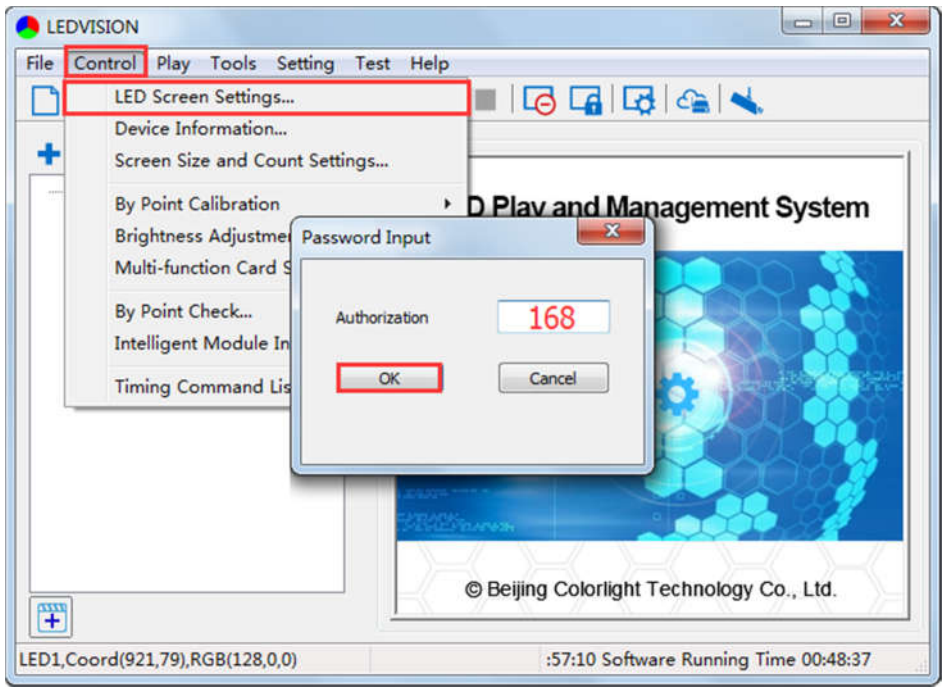
2. Click **[Detect Senders]** in **[Sender]**. Please check the hardware connection or the installation of relevant driver if cannot detect senders.

Select network port and click **[Detect Receiver Cards]** respectively, the software will automatically acquire the receiver card quantity of each network port of the sender. Please check corresponding cable if the numbers of receiver card are inconsistent with actual status.



5.2 LED Screen Setting

Click **[Control]**—**[LED Screen Settings]** and a Password Input box will appear. Enter the authorization password **[168]** to enter the LED Screen Setting interface, and set up **"Sending Device"**, **"Screen Parameters"** and **"Receiver Mapping"**.



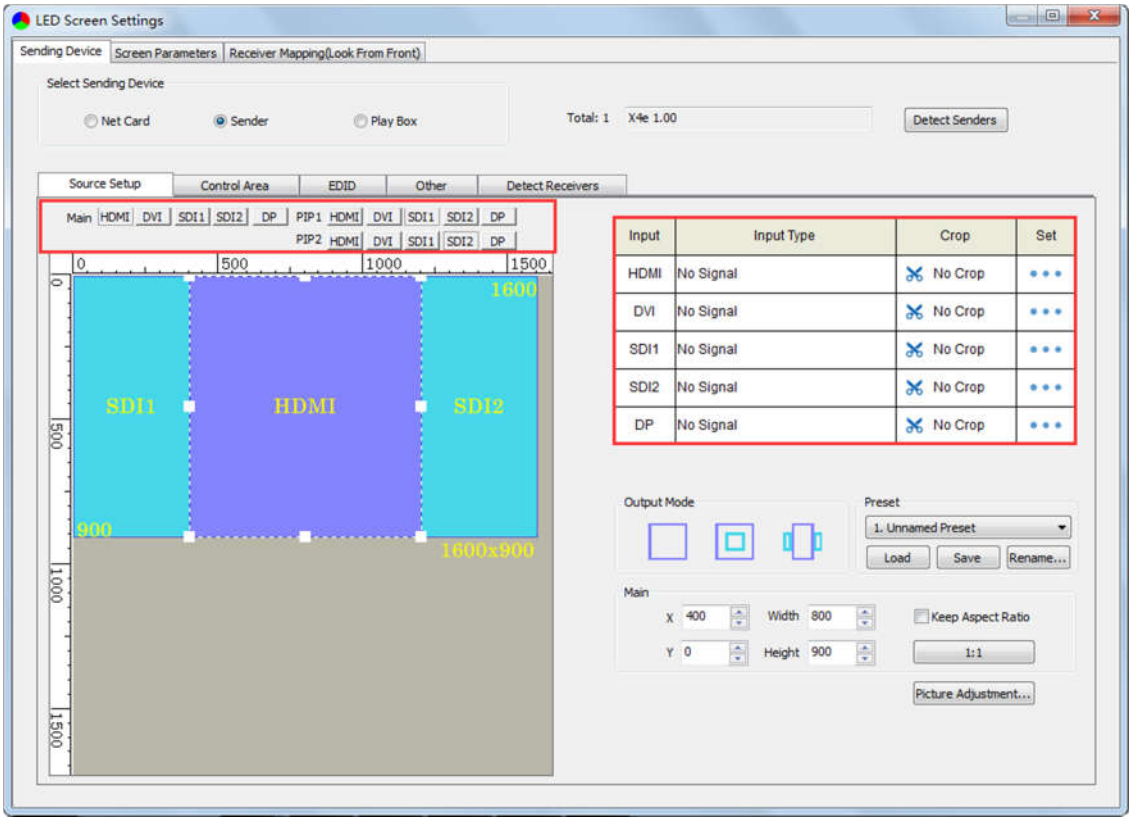
5.2.1 Sending Device Setting

[Select Sending Device] for **[Sender]**, and **detect** senders. **Sending Device Setting** includes 5 parts: **Source Setup**, **Control Area**, **EDID**, **Other**, **Detect Receivers**.

1. **Source Setup**

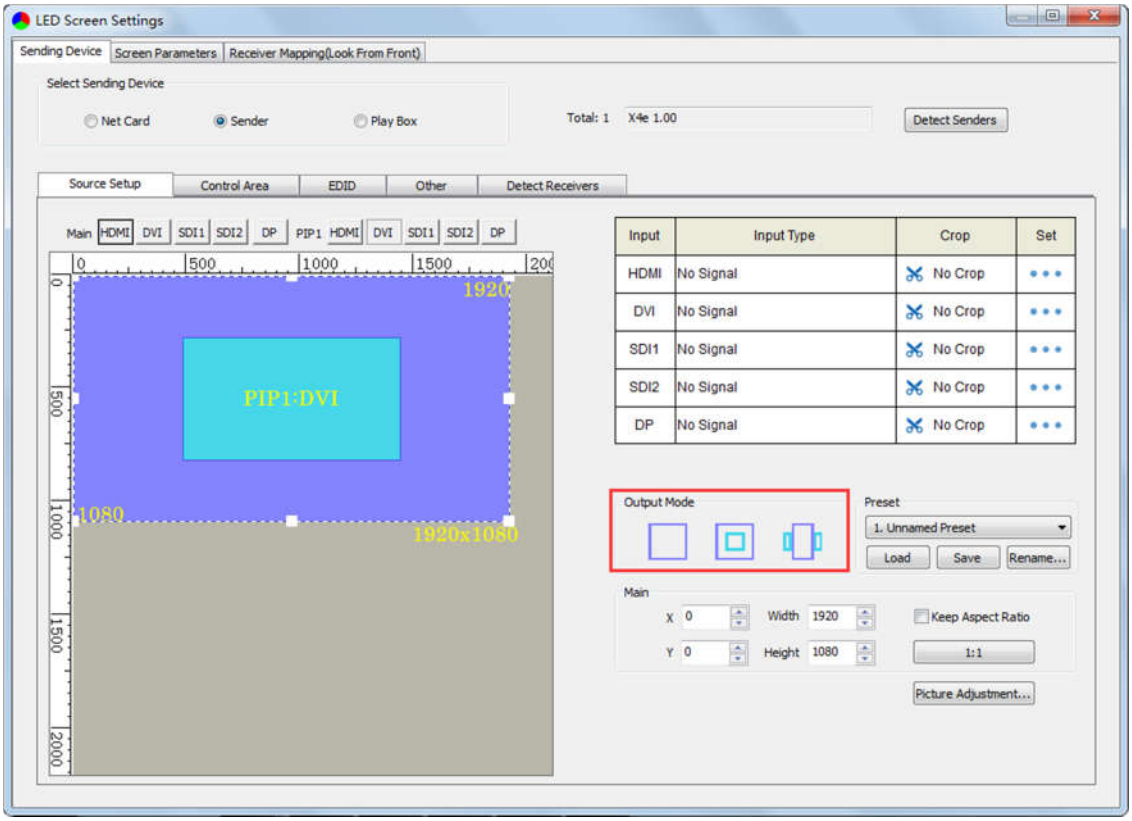
① **Signal Source**

When the input signal source of X4e is normal, the upper right of the software interface will display the input signal information auto acquired via the software. Users can select specific signal source (HDMI/DVI/SDI1/SDI2/DP) according to needs in **[Main]**; If PIP mode has been open, users can also select specific signal source (HDMI/DVI/SDI1/SDI2/DP) in **[PIP]**. At the moment, the image of selected signal source will display in the **Image View Area** on the left of the software interface.



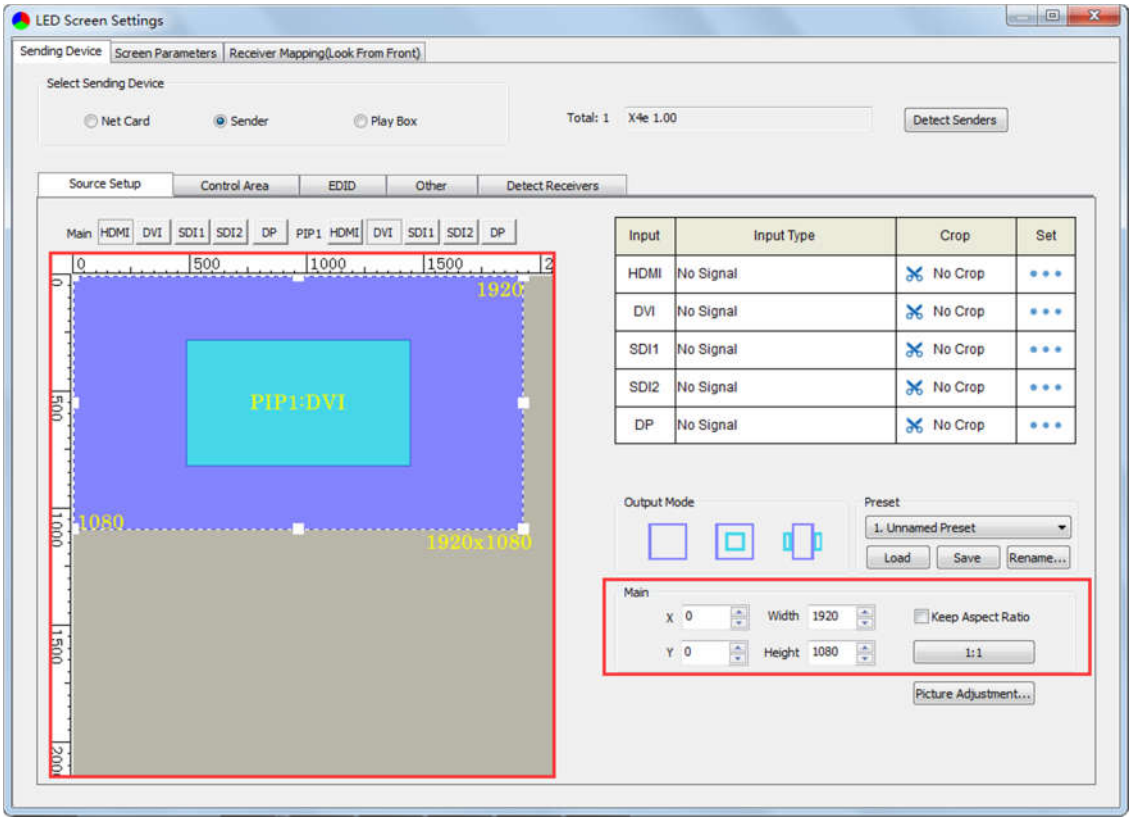
② **PIP**

There are three output modes of main image and PIP in **[Output Mode]**, users can select specific PIP mode based on the requirement, and conduct the operation like move, scaling and cropping on the main image and PIP image respectively.



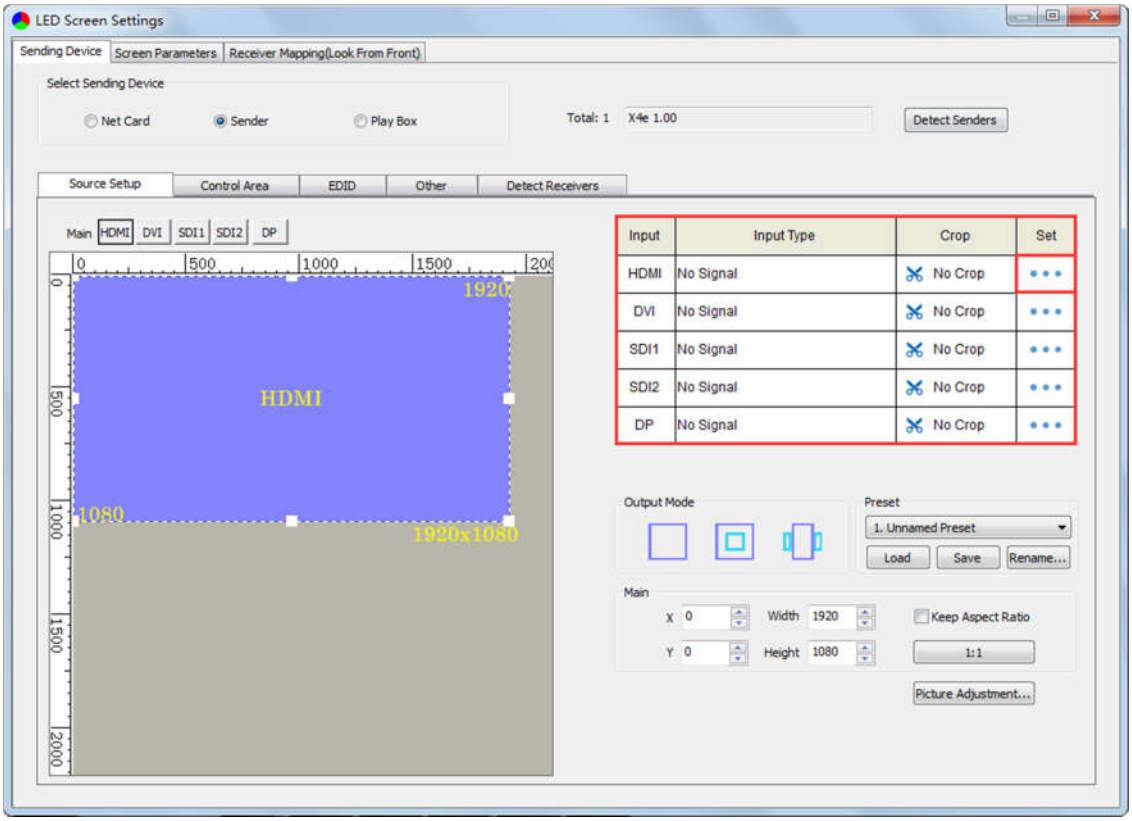
③ Scaling

In **Image View Area**, **select** the image that needs to be scaled, set X, Y, width and height of it in **[Main]** or **[PIP]**, or you can click the white box in the bottom right corner of the image and drag it with the mouse, finally click **[Save]**.

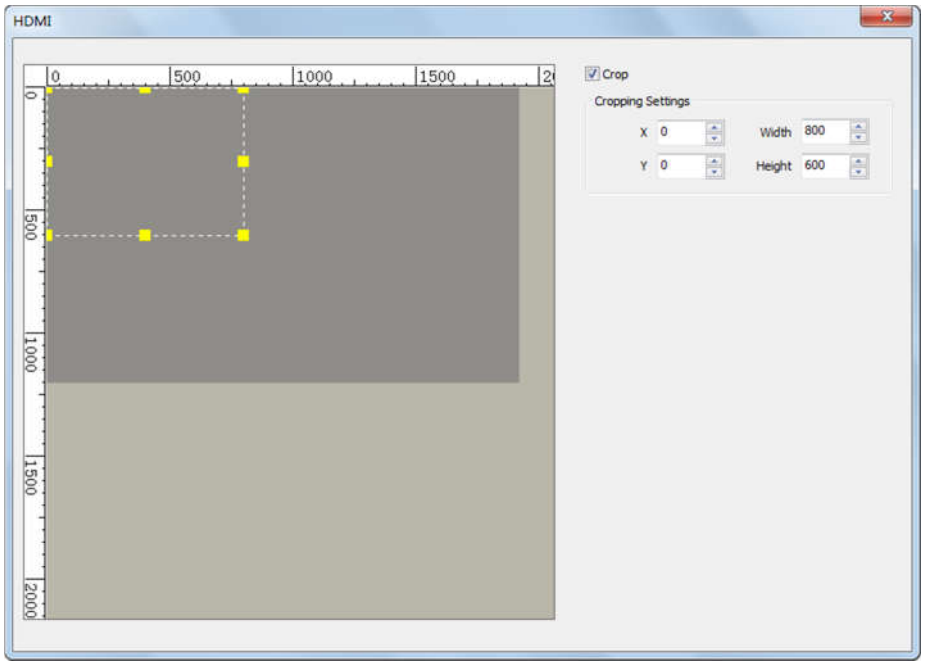


④ Cropping

Select signal source of the image that needs to be cropped in **Input Signal Area**, click **[Set]** to enter the cropping interface.

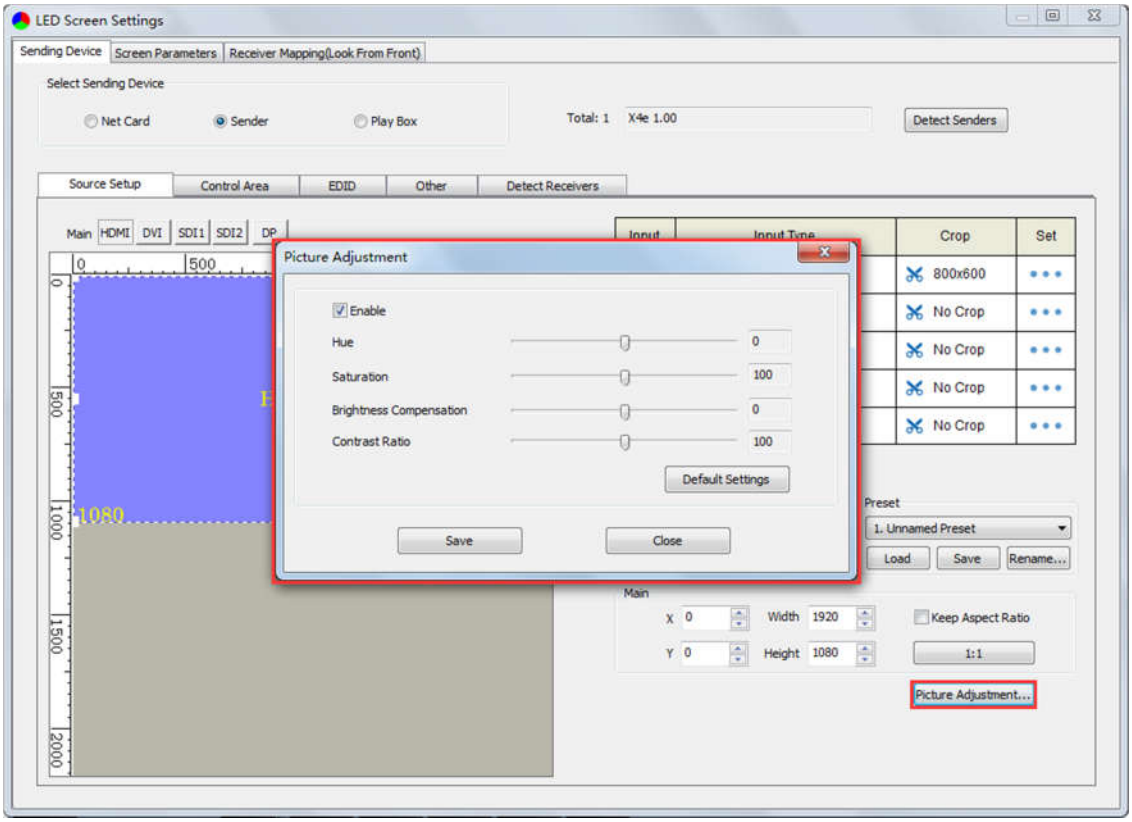


In the cropping interface, check **[Crop]**, and set X, Y, width and height in **[Cropping Settings]**, then the cropping setting is auto saved.



⑤ Picture Adjustment

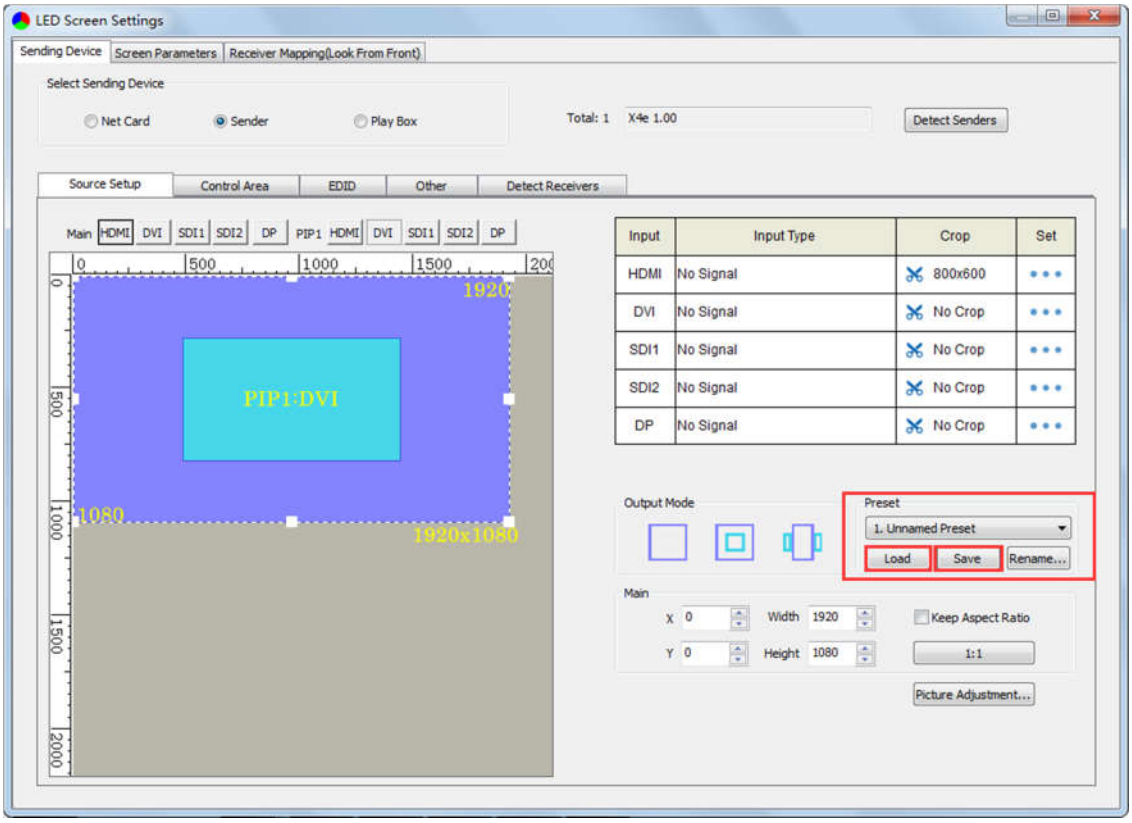
Click **[Picture Adjustment]**, and enter the interface of picture adjustment. Check **[Enable]**, and adjust hue, saturation, brightness compensation and contrast ratio of the whole image, then click **[Save]** to complete. After setting, you can click **[Default Settings]** to restore the default values of every parameter, that is, hue and brightness compensation default to 0, saturation and contrast ratio default to 100.



⑥ Preset

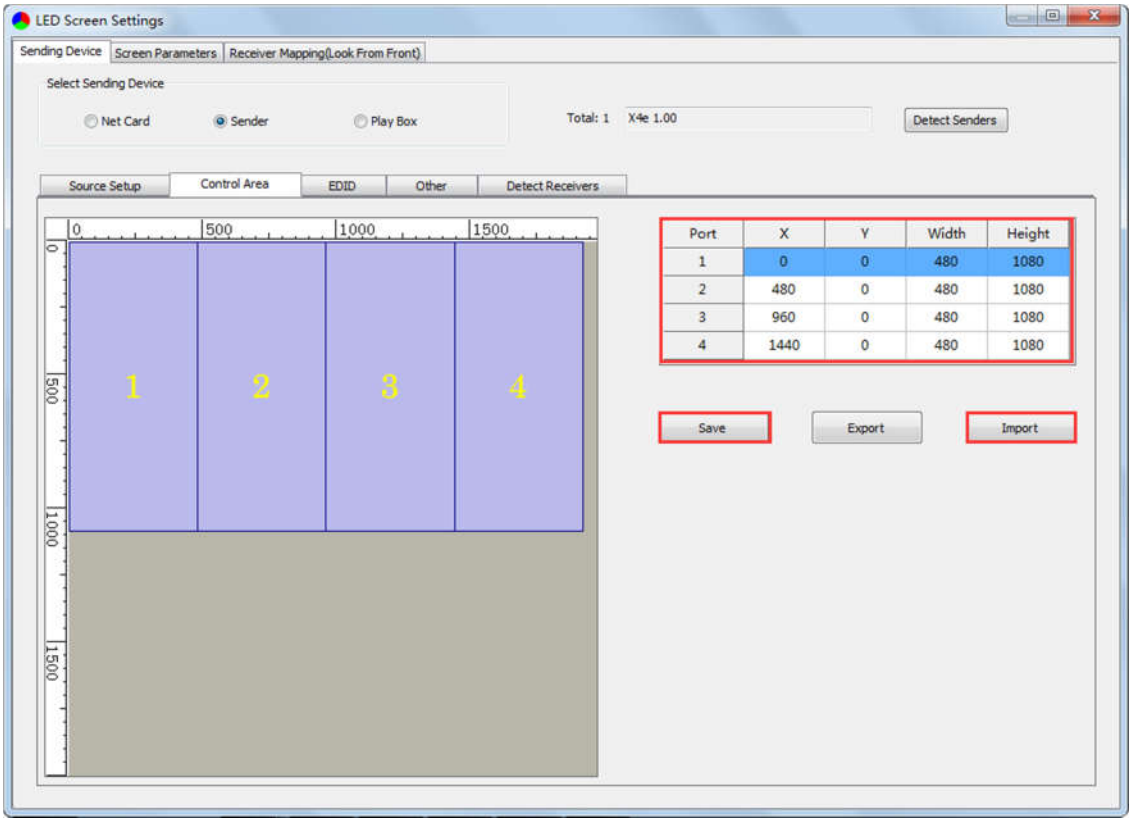
In **[Preset]**, 16 preset parameters can be saved, and every preset parameter includes all parameter information of source setup (signal source, PIP, scaling, cropping, picture adjustment), users can directly load one preset parameter to display the image according to needs, and don't need to set up all parameters again.

After completing setting up all parameters of source setup, **select** unnamed preset, click **[Save]** to save the parameter to sending device, and rename it; click **[Load]**, send the parameter to receiving cards. At the time, the image should display on the basis of preset parameter.



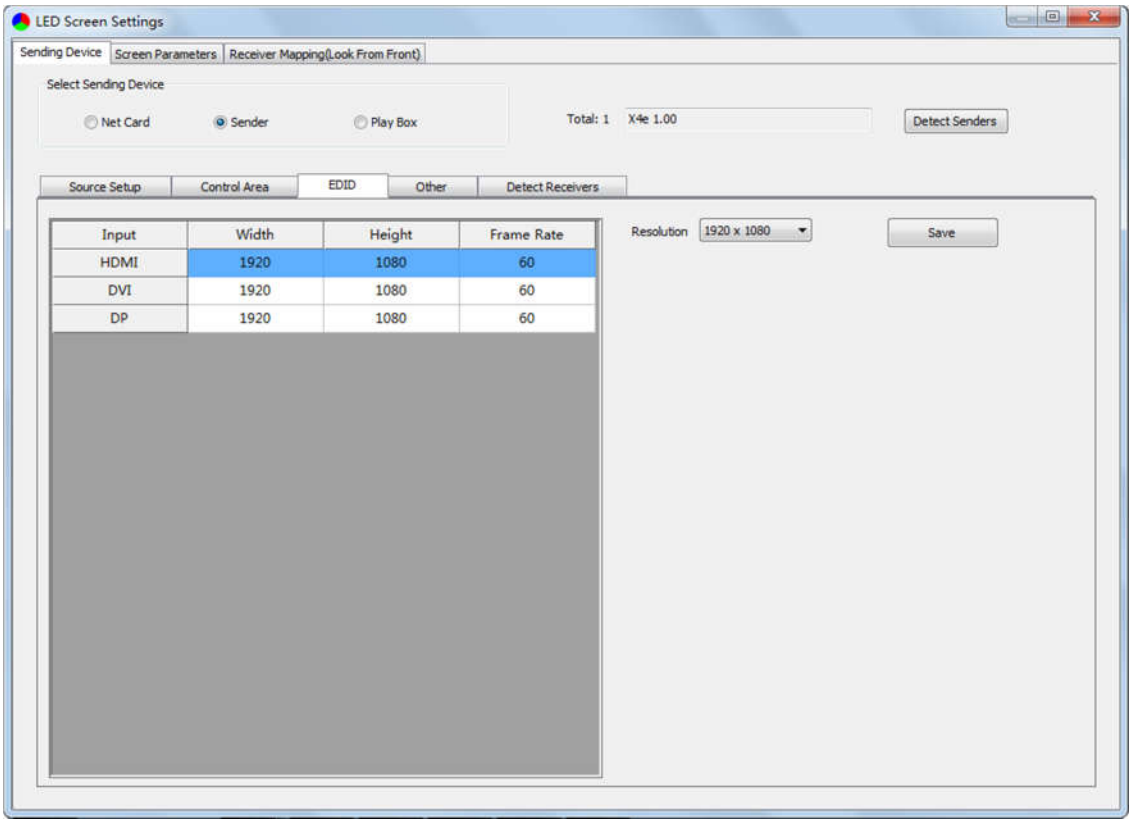
2. **Control Area**

In **Control Area**, it displays the control area of each net port of X4e. Click **[Import]** and select correct parameter file, click **[Save]** to save parameters into corresponding sender; or set up the control area of each net port respectively (X, Y, Width, Height), click **[Save]**.



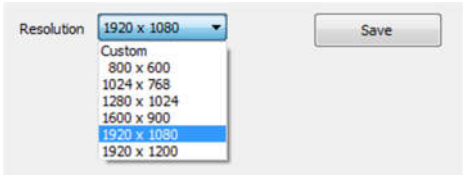
3. **EDID**

Set sender resolution, the first one is the default as current resolution.



Click the dropdown button to display the resolution list to select the mainstream resolution, and you can also customize the sender resolution, by setting the width/height and frame rate.

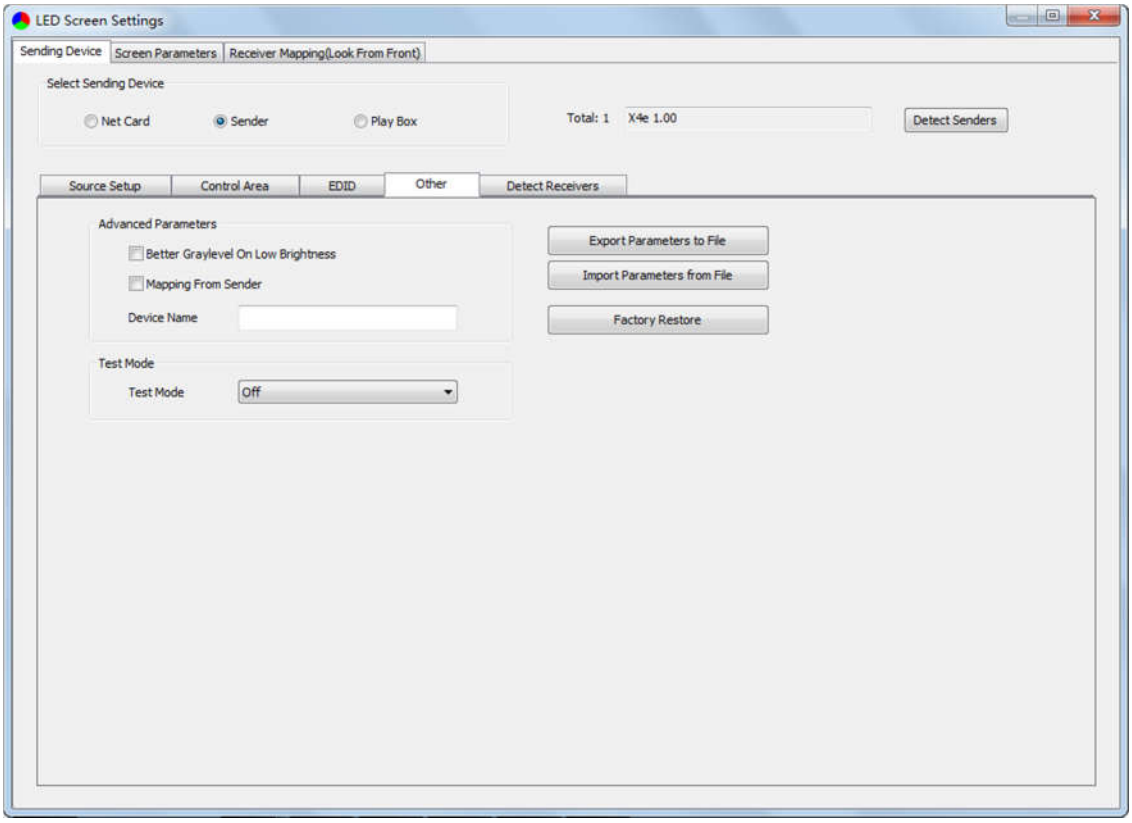
Click **[Save]** after setting.





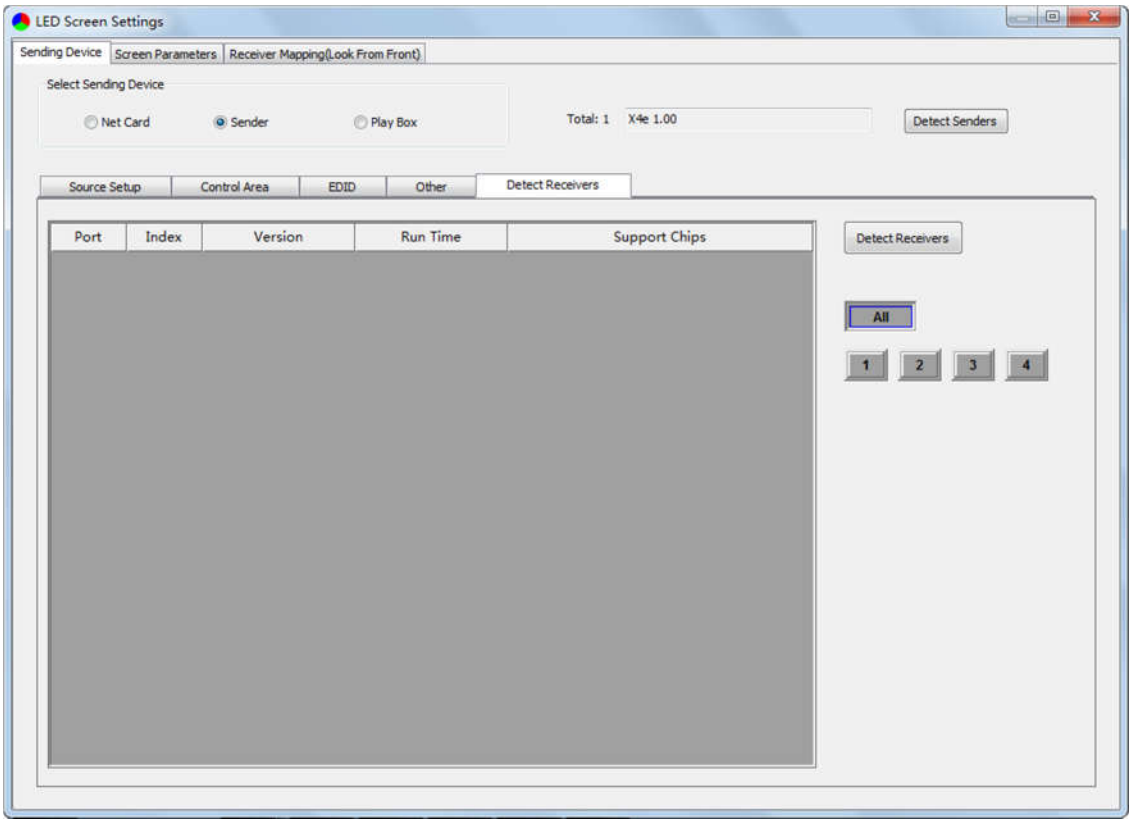
4. **Other**

Advanced Parameters Setting (Better graylevel on Low Brightness, Mapping from Sender, Device Name), Test Mode Selection, Factory Restore.



5. **Detect Receivers**

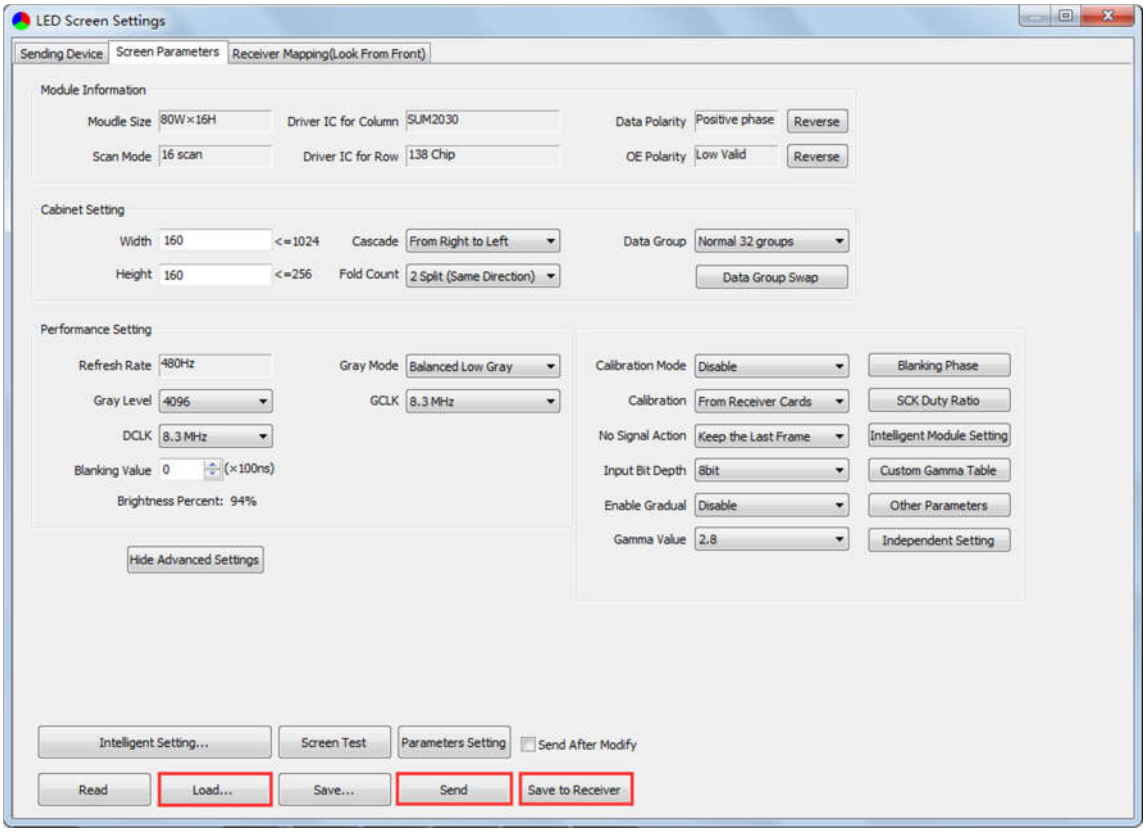
Detect receivers under each net port of X4e controller, and acquire relevant information about the receivers (Port, Index, Version, Run Time, Support Chips).



5.2.2 Screen Parameters Setting

Observe the display screen with single cabinet as a unit, and if all cabinets themselves could display normally {it is normal circumstance even the picture between cabinets is not continuous}, please ignore this step and directly go to the next step.

Otherwise, configuration must be done as follows:



Click **[Load]**, choose the correct parameter file.

Click **[Send]**, to send the loading parameters to the receiving cards. At the moment, each cabinet should display normally (it is normal circumstance even the picture between cabinets is not continuous), then click **[Save to Receiver]** to save the parameters to the receiving cards.

If each cabinet cannot display normally, you can conduct via the **Advanced Settings** (**Module Information**, **Cabinet Setting**, **Performance Setting**) or **Intelligent Setting**, and you can also contact with the LED screen engineers.

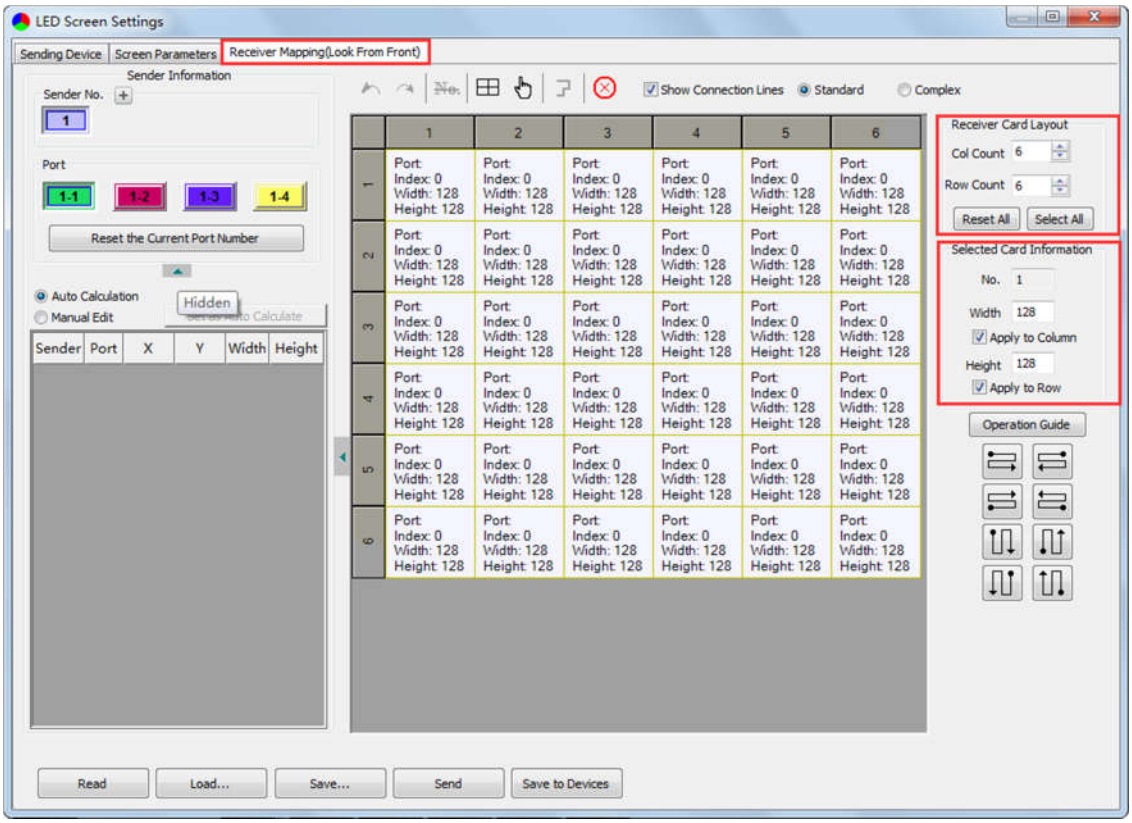
5.2.3 Receiver Mapping Setting

Users don’t need to set up the control area of each net port respectively, but to the connection relationship between the receiving cards under the network port loading via each sender, and the software will auto calculate and set up the port control area according to the connection relationship.

Detailed setting steps as follows:

1. **Set up the quantity of receiving card**

Set how many receiver (receiving card) that one port manages in Row Count and Col Count (6*6 as an example) according to the actual loading of LED display, you will see LED display mapping area from the right side (Viewing from the front of LED display).



2. **Receiving Card Parameters Setting**

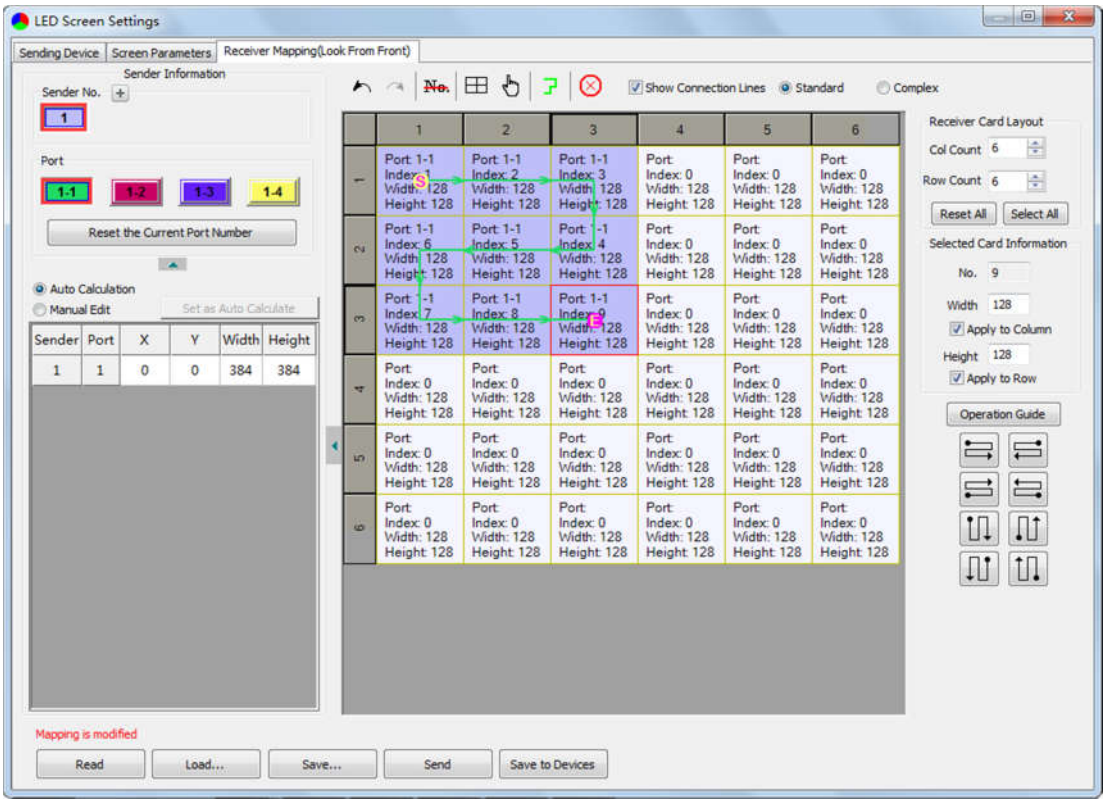
Select the target **sender** and the **net port** from the left side, then **select** the corresponding **cabinets** within net port actual control area and set the connection lines in the mapping area.

There are two methods to set up:

① **Use mouse to select one by one**

In the mapping area, select the first receiving card based on the actual connection of the net port (view from the front), and then set up the actual loading width and height of the target receiving card in the right side (128*128 as an example).

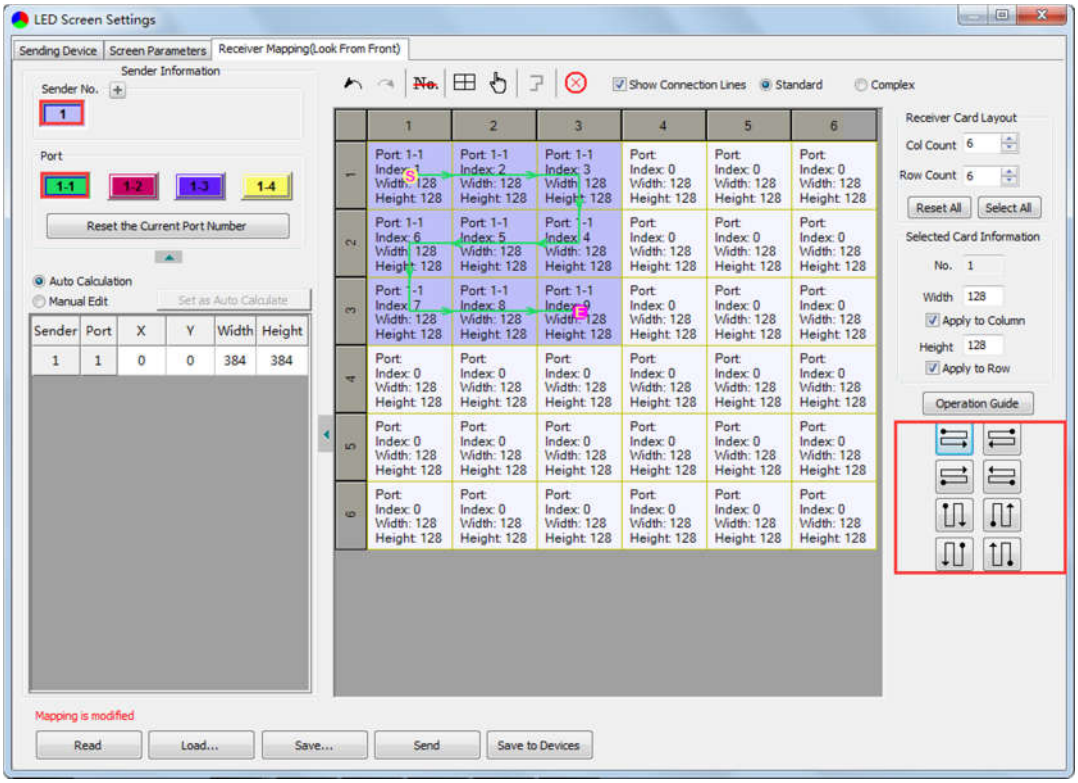
Click the receiver (receiving card) one by one, according to actual connecting line, until the last one for this network port loads.



② Connection Pattern

Aiming at the LED screen with standard connection lines, firstly set up the receiving card information according to the actual loading width and height (128*128 as an example).

Select the connection line you want from the right side, then cover the corresponding area of net port loading in mapping area, finally complete setting.

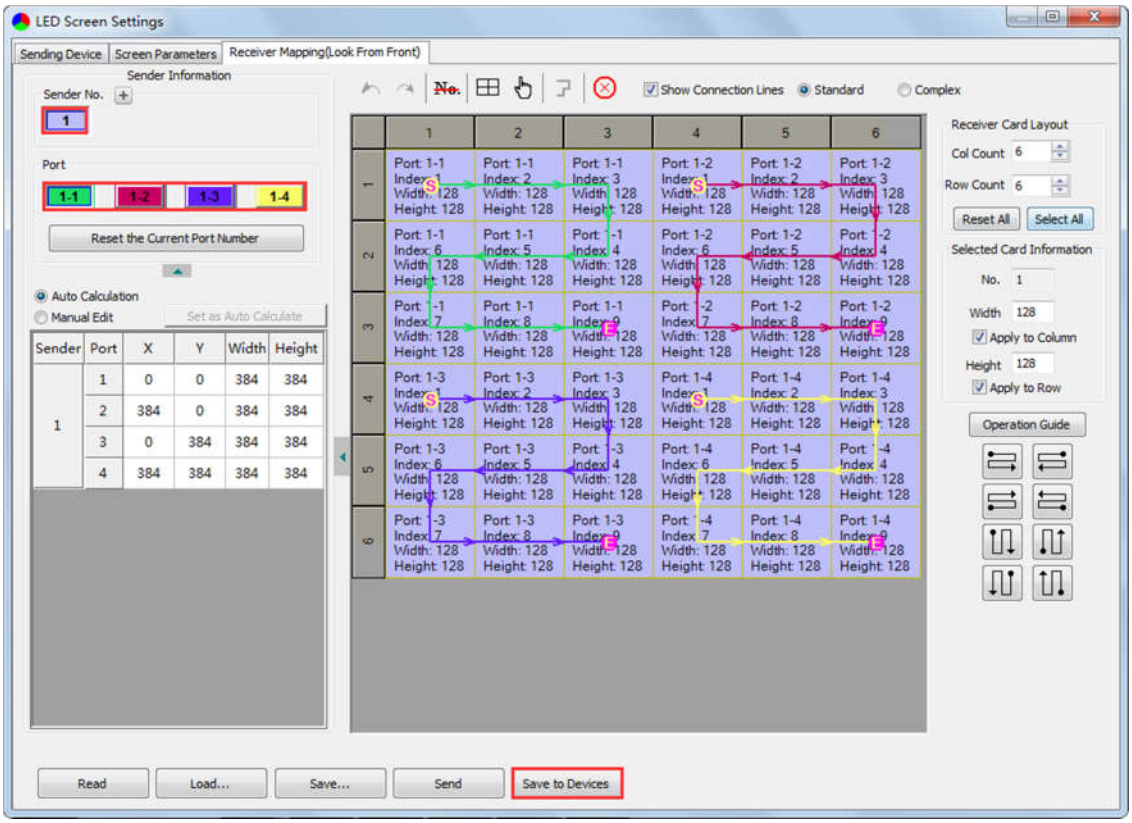


Note: As the cabinets have multiple and different specification (that is the inconsistent capacity of the receiving card), you can select the different one to adjust separately after completing setting.

3. **Send & Save to Receiving Card**

After setting up all the receiving card parameters and connection lines respectively, click **[Send]** to send the correct parameter to the receiving card, and the screen should display normally at this time.

Then click **[Save to Receiver]** to save parameters to corresponding receiving card after confirming.



6. LCD Operation Instruction

6.1 Operational Motion Instruction

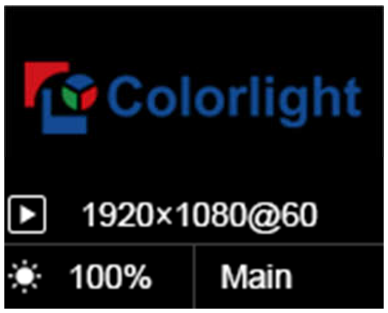
Knob/OK:

- Press the knob/OK under main interface to enter operation interface of menu.
- Rotate the knob to select menu or press the knob/OK under the operation interface of menu to select current menu or enter submenu.
- Rotate the knob to adjust parameters after selecting the menu with parameter, and it will be auto saved within one second after adjustment.

ESC: Return key, exit current menu or operation.

6.2 Main Interface

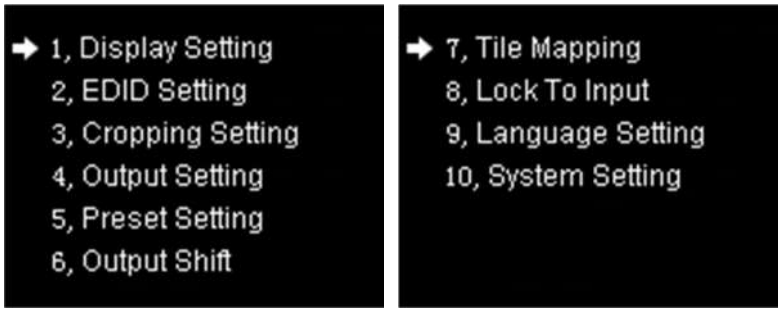
After starting X4e, main interface of LCD display is as follows:



First row: Company logo
Second row: Image resolution
Third row: Screen brightness, Output mode

6.3 Operation Instruction

Press the knob/OK to enter the operation interface of main menu, and it includes 10 operation instructions: **Display Setting**, **EDID Setting**, **Cropping Setting**, **Output Setting**, **Preset Setting**, **Output Shift**, **Tile Mapping**, **Lock To Input**, **Language Setting**, **System Setting**.



6.3.1 Display Setting

Rotate the knob to select display setting, then press the knob/OK to enter submenu of "**Display Setting**".



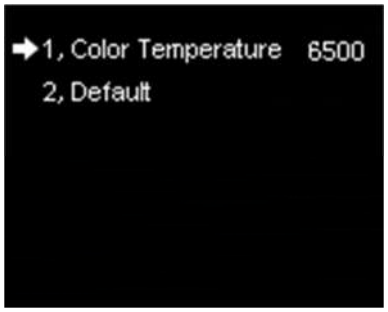
1. **Brightness**

Enter the adjustment interface of "Brightness", and rotate the knob to change the percentage of brightness.



2. **ColorTemp**

Enter the adjustment interface of "ColorTemp", rotate the knob to change the value of color temperature in the option of "Color Temperature", and you can also press the knob/OK to reset the value of color temperature as 6500 in the option of "Default".



3. **Better Gray**

Press the knob/OK to turn on/off the option of "Better Gray".

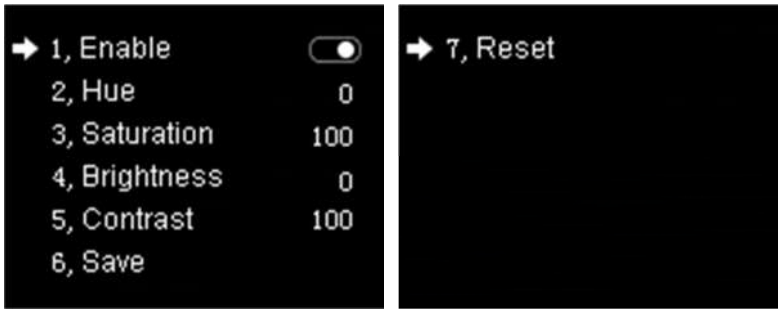
4. **Test Mode**

Enter the setting interface of “Test Mode”, rotate the knob to select test mode, press ESC back to normal mode.



5. **Picture Adjustment**

Enter the setting interface of “Picture Adjustment”, and press the knob/OK to turn on/off “Enable”. If “Enable” has been turned on, users can set hue, saturation, brightness and contrast of image by knob then save the data; and users can also restore the default values of every parameter, that is, hue and brightness default to 0, saturation and contrast default to 100.

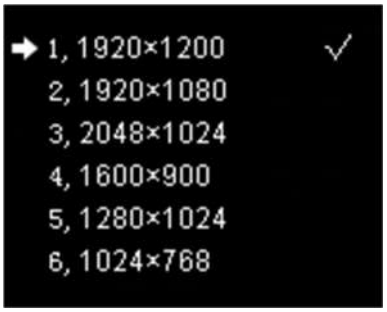


6.3.2 EDID Setting

Rotate the knob to select EDID setting, then press the knob/OK to enter submenu of “**EDID Setting**”.



Enter the EDID setting interface of “HDMI” or “DVI” or “DP”. Rotate the knob to select conventional resolution; or set width, height and frame rate by knob in the option of “Custom”.







6.3.3 Cropping Setting

Rotate the knob to select cropping setting, then press the knob/OK to enter submenu of "**Cropping Setting**".

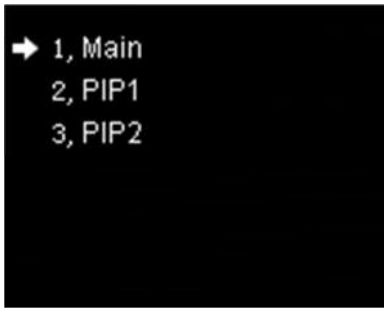


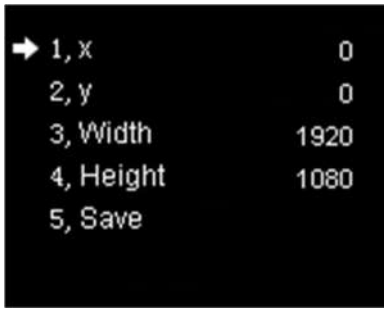
Enter the cropping interface of "HDMI" or "DVI" or "DP" or "SDI1" or "SDI2", press the knob/OK to turn on/off crop. If it has been enabled, set x, y, width and height of input signal by knob then save the data.



6.3.4 Output Setting

Rotate the knob to select output setting, then press the knob/OK to enter submenu of "**Output Setting**"; Continue rotating the knob to select "Main" or "PIP1" or "PIP2", press the knob/OK to enter the output setting interface. Rotate the knob to adjust x, y, width and height of output image separately, then save it.



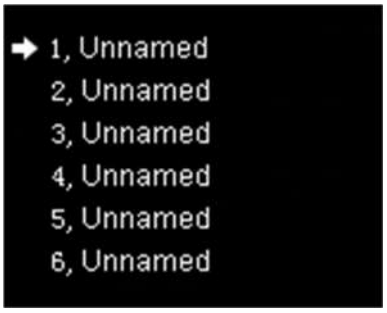


6.3.5 Preset Setting

Rotate the knob to select preset setting, then press the knob/OK to enter submenu of "**Preset Setting**".



In the submenu, 16 preset parameters can be saved, and every preset parameter includes all parameter information of source setup (signal source, PIP, scaling, cropping, picture adjustment), users can also directly load the saved preset parameter to display the image according to needs, and don't need to set up all parameters again.





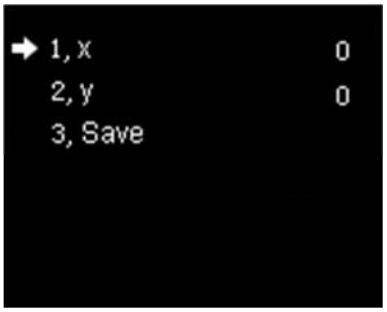


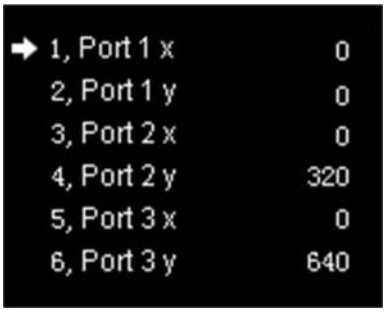
6.3.6 Output Shift

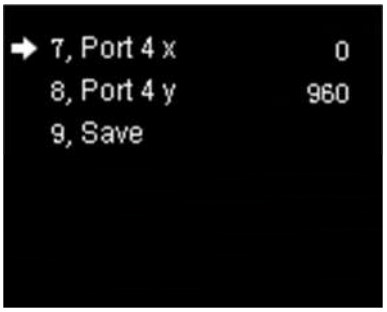
Rotate the knob to select output shift, then press the knob/OK to enter submenu of "**Output Shift**".



Output shift includes two ways: "Whole" and "By Port". In the setting interface of "Whole", you can rotate the knob to set x and y of the whole image and save it; in the setting interface of "By Port", you can set x and y of the image of each net port respectively, then save it.





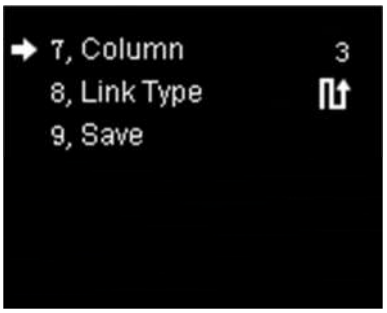


6.3.7 Tile Mapping

Rotate the knob to select tile mapping, then press the knob/OK to enter submenu of "**Tile Mapping**". In the submenu, press the knob/OK to set sender as the connection source. At this time, rotate the knob and press the knob/OK to enter the setting interface, select the net port of which need to be set and set offset values of X and Y, also, you can set the width, height, row, column and link type of corresponding cabinets, then save all the parameters.







6.3.8 Lock To Input

When several controllers were cascaded with each other, "Lock To Input" is necessary to ensure the synchronization of video display. Rotate the knob to select "Lock To Input", then press the knob/OK to enter submenu of it, in the submenu, you can select Genlock synchronous signal source by knob.





6.3.9 Language Setting

Enter the setting interface of “**Language**”, press the knob/OK to switch the language.



6.3.10 System Setting

Enter the setting interface of “**System Setting**”, you can restore factory settings and check current firmware information.



Visual Future

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