



Mooncell

Product instruction manual

SOFTWARE USER' S MANUAL

Auto LED DISPLAY CONTROL SYSTEM

Shenzhen Mooncell Electronics Co., Ltd

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Chapter 1 Index

Mooncell is a National High-Tech enterprise that specializes in the R&D of the Led Display Control System, its products including: Synchronous LED Display Control System, The T6 Chip that's specially designed for the Led Display Control System and Industrial-Grade Fully Automatic Data Acquisition, Detection & Calibration Machine.

The AutoLED is an independent software of Mooncell's Synchronous LED Display Control System, using it together with Mooncell's Sending Card, Receiving Card and Multifunctional Card to configure, control the power supply, adjust the brightness, monitor the working status of the led display screen.

The Main Features of the AutoLED:

- *Supporting Signal Hot Backup for the Receiving Card and Sending Card.*
- *Supporting to get High Refresh Rate, High Grey Grade and High Lightness effects with just normal Driver IC.*
- *Supporting Pixel to Pixel Brightness/Chromaticity Calibration(i.e.:3 Dimensional Color Space Conversion)*
- *Supporting to Read back the Configuration Files from the receiving*

cards, Monitor the Environment, Detect the Communication Errors.

- *Supporting the Online Self Testing of the receiving card.*
- *Supporting 8/10 Bit Grey Grade Image Input.*
- *Supporting Any Scan Lines within 64 Scans.*

Chapter 2 Operation Environment

2.1 Hardware Environment

CPU: Pentium 2.6GHz or above.

Memory: 512 M or above.

2.2 Software Environment

Operation Systems: Windows NT/XP/Vista/Win7/Win8/Win10。

Chapter 3 Hardware Connection

Step 1: To get the sending card installed into the slot of the PC's Main board or the external sending enclosure(or other devices with independent power supply) and to get the DVI & USB cable all connected, as shown in figure 3-1.

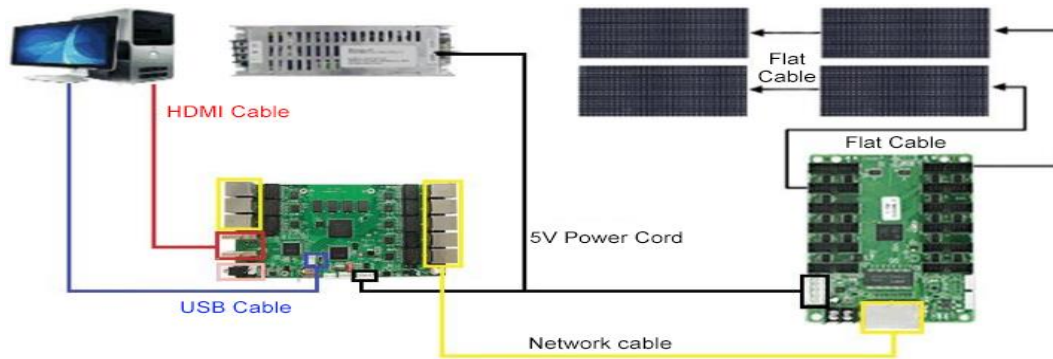


Figure 3-1: Hardware Connection Diagram

Step 2: To power the receiving cards and the led screen, to get the sending card connected to the receiving cards with the 568B type Ethernet Cable. When the indicators of the sending card and the receiving card are both flashing, it indicates that the hardware communication is normal.

Step 3: To confirm the hardware connection. Open the debugging software AutoLED, and confirm whether the communication between the sending card and the receiving card is established, as shown in Figure 3-2.

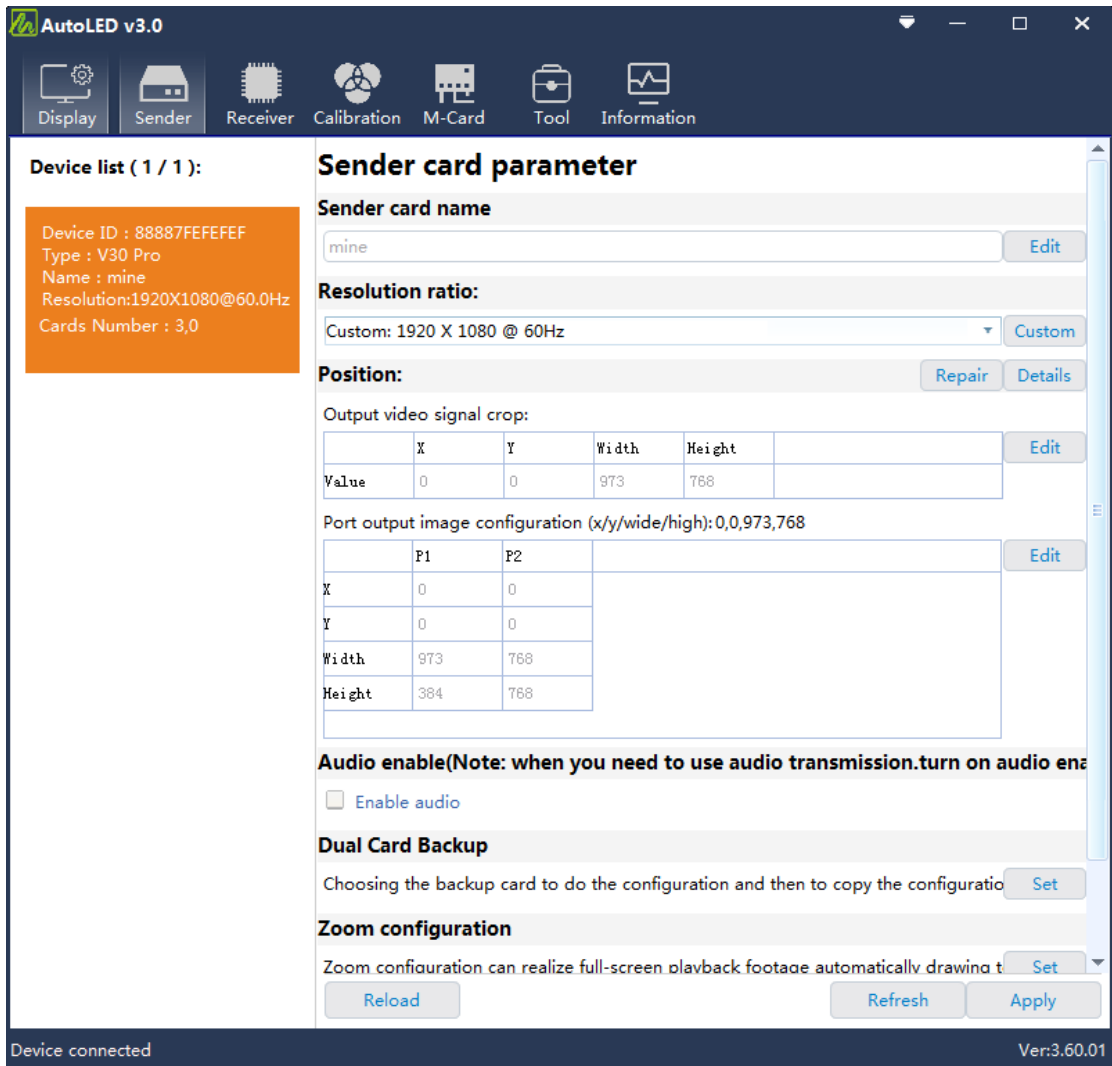


Figure 3-2 The communication status between the sending card and receiving card

When the number is not 0, it means the communication between the sending card and the receiving card is normal, otherwise it means the communication is abnormal.

It indicates that the sending card could correctly detected or read the video signal from the front-end.

- **Tips:** From the AutoLED Software to confirm whether the graphics of the computer is well set or not, as shown in figure 3-2.

Step 4: Graphic Settings

1. Win10 System :

Right click on the desktop of the computer, then click “ display settings ”, enter into “ display interface ”, Scroll down to find the “ multiple displays ”, and choose “ Copy these Displays ” from the drop down list, as shown in

figure3-3(left). Or directly press windows+P and then click “ Copy”, as shown in figure3-3(right)



Figure 3-3 Win10 Graphic Settings

2. **Win7/Win8 System:** To right click on the computer's desktop- screen resolution-detect- select "copy" mode, or press "Windows+P" to select the "Copy" Mode, as shown in figure 3-4.



Figure 3-4 Win7 Graphics Settings

3.XP System

(1) **ATI Graphics Card:** To right click on a blank space on the desktop- properties-settings-advanced-graphics driver control panel- display management-right click to copy,as shown in figure 3-5.



Figure 3-5 XP System ATI Graphics Settings

(2) "NVIDIA" graphics card: right-click on a blank space on the desktop--->Properties--->Settings--->Advanced--->Go to the graphics driver control panel--->Set up multiple displays---> Select the "copy" mode, as shown in Figure 3-6.



Figure 3-6 XP System "NVIDIA" Graphics Settings

Chapter 4 Screen Configuration

4.1 Sending Card Settings

(1) Editing(Modifying) the Sending Card Name. From the “Sender” Window(Interface),you can edit the “ Send Card Name” by clicking the “Edit”. Editing the Sending Card Name will be convenient for you to manage the cards when you have multiple cards connected to the screen, you can quickly select a specific sending card to send the data, which will greatly enhance the debugging efficiency.

(2) Resolution Settings. When the current resolution & rate of the sending card are inconsistent with the input DVI signal, it may causes problems for the screen like: image scaling,distortion,ghosting,flickering,etc. Therefore the resolution of the inputted signal needs to be changed or you can change the resolution of the sending card itself to make the resolution of the sending card to be the same as the DVI signal(the video from the video processor or splicer is forced output, so you don't have to set the sending card resolution(ratio) when they are connected to the sending card, but on the left,from the “device list”, the input resolution will be displayed.)

Custom Sending Card Resolution: To click the “Sender” enter into the Sending Card Settings Interface, as shown in figure 4-1-1. you can select the preset resolutions from the drop down list or you can custom the

resolution by clicking the “custom” to change the resolution of the sending card to be the same as the DVI signal. When it’s all done, click “Apply” to save the configurations to the sending card.

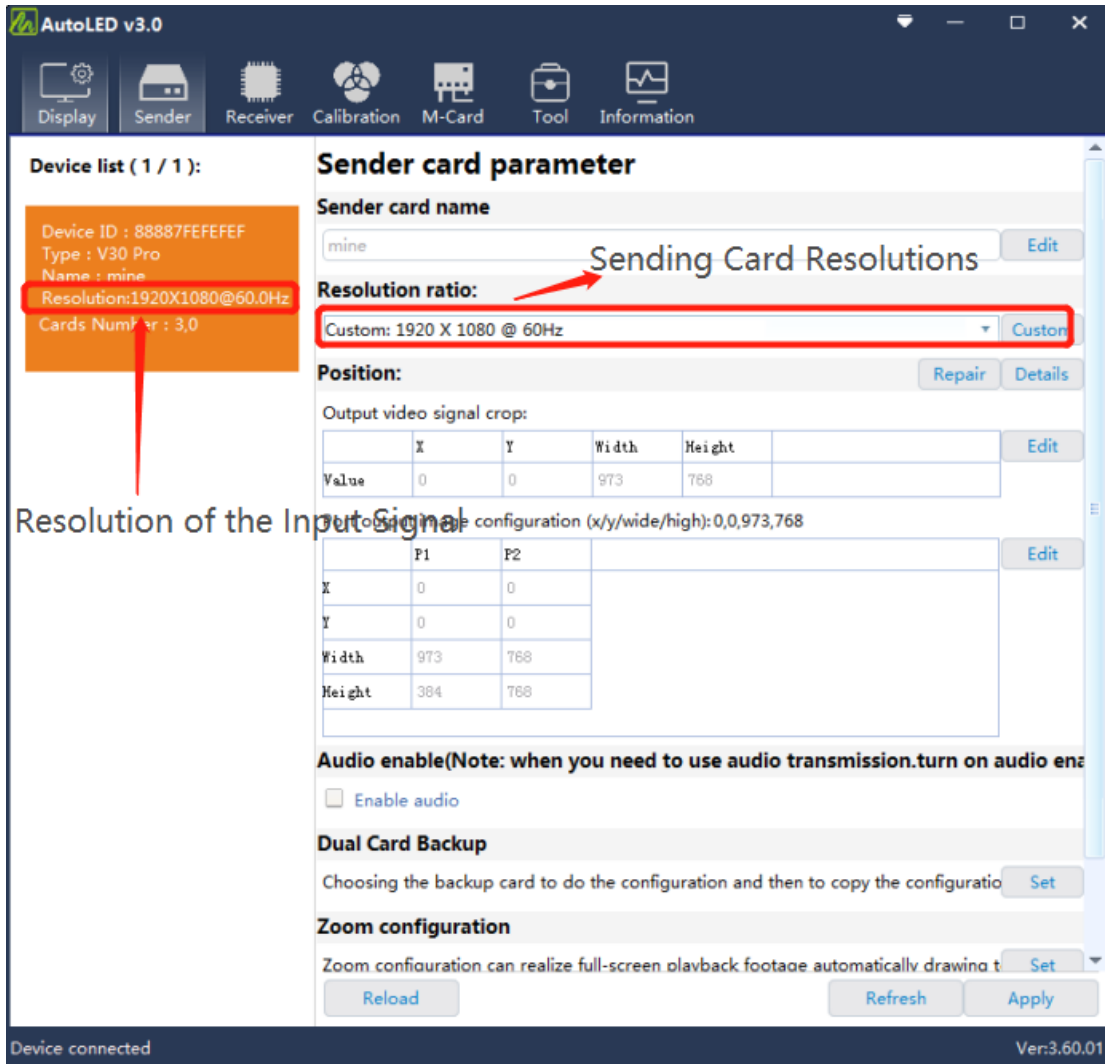


Figure 4-1-1 Sending Card Resolution Settings

(3) Sending Card Splicing (Position Settings of the DVI Signal)

From the “Sender” Window, you can find the “Position” Interface, you can edit to capture the DVI signal (output video): to set its coordinates, the values of its width and height, with this you can adjust

the starting position of the image on the led screen, the default coordinates are(0,0). The other positions will be automatically set according to the setting of the led screen connection,you can also manually to set the positions and to splice images from multiple sending cards. Once the debugging is done, click “apply” to save the configurations to the sending card.

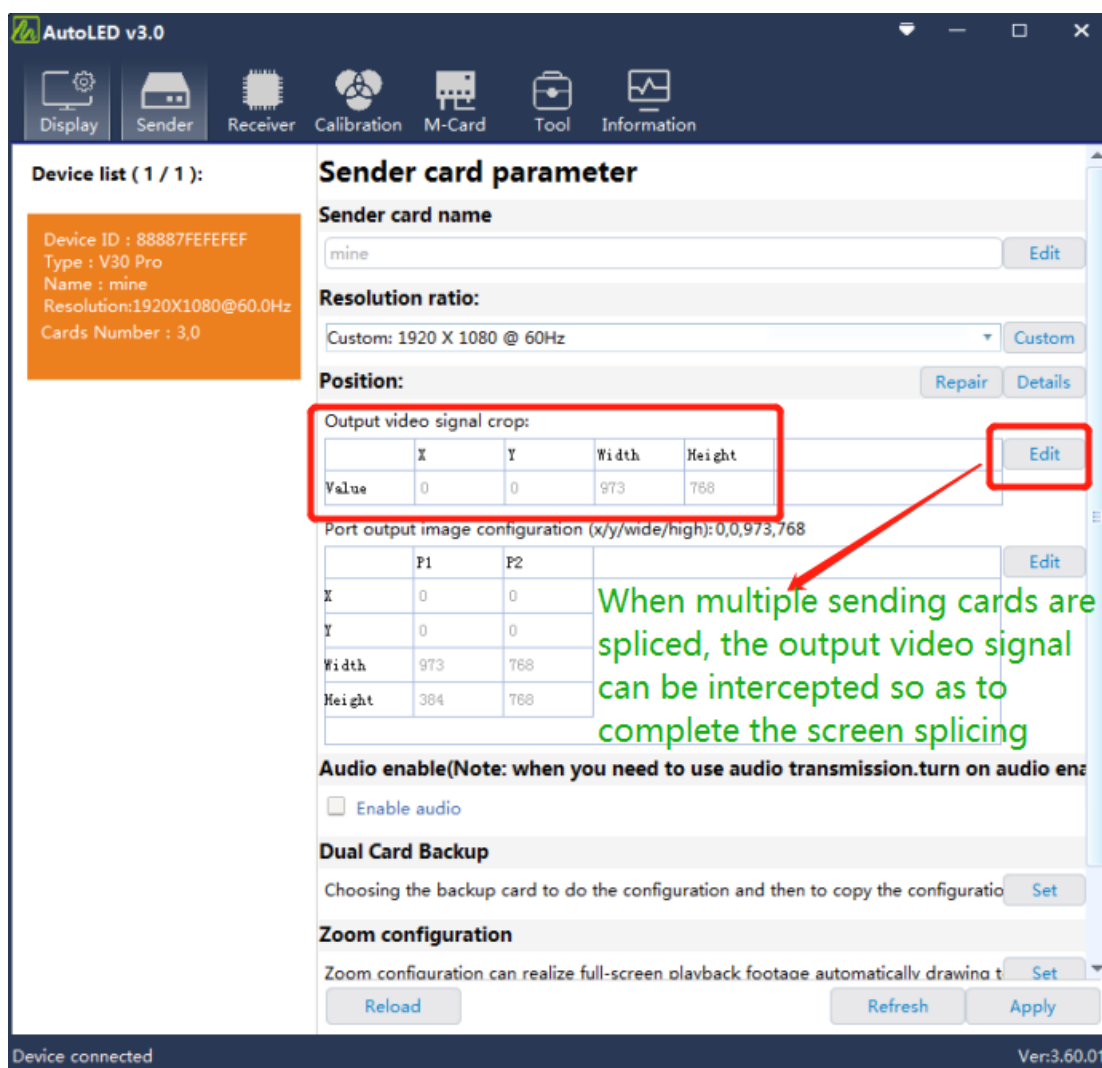


Figure 4-1-2 Sending Card Displaying Position Settings

- **Tips:** When the led screen needs to be spliced by using the sending card ,the horizontal resolution multiply by the vertical resolution should be less than 2.3 million pixels.

(4) Audio Enable

The computer or other equipment output the audio, with the audio cable to get it connected to the audio port of the sending card, then through the gigabyte Ethernet port to transmit it to the multifunctional card, the multifunctional card transmit it out through its audio port. When the hardware is well connected, check to enable the audio function from the sending card interface, and then the audio could be transmitted to the amplifier or other equipment from the multifunctional card.

(5) Input Color Depth

Select 8bit or 10bit, as shown in figure 4-1-3

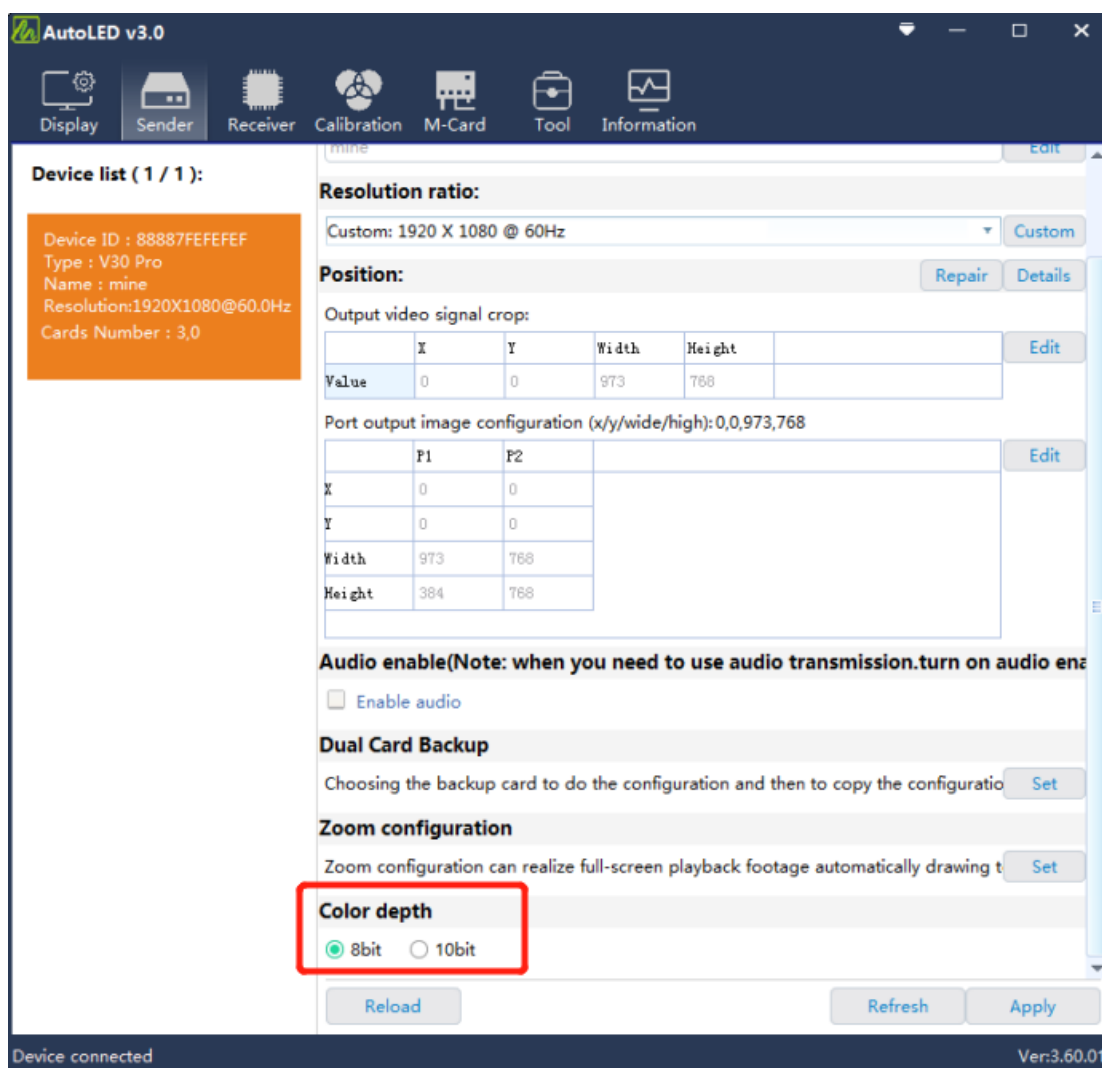


Figure 4-1-3 Input Color Depth

(6) 2in1 Video Processor

When the 2in1 video processor is connected to the computer and the receiving card, the interface will be as shown in figure 4-1-4, input video source edit, just click the corresponding HDMI or DVI input signal source,click “ edit resolution” to change the resolution of the input video, horizontal resolution,vertical resolution and refresh frequency, and then click “Confirm”. as shown in figure 4-1-5;Output Positions Edit, click “Edit Position”, select the corresponding # to edit the position, the size ,x,y,width, height of the position could be edited, as shown in figure 4-1-6;

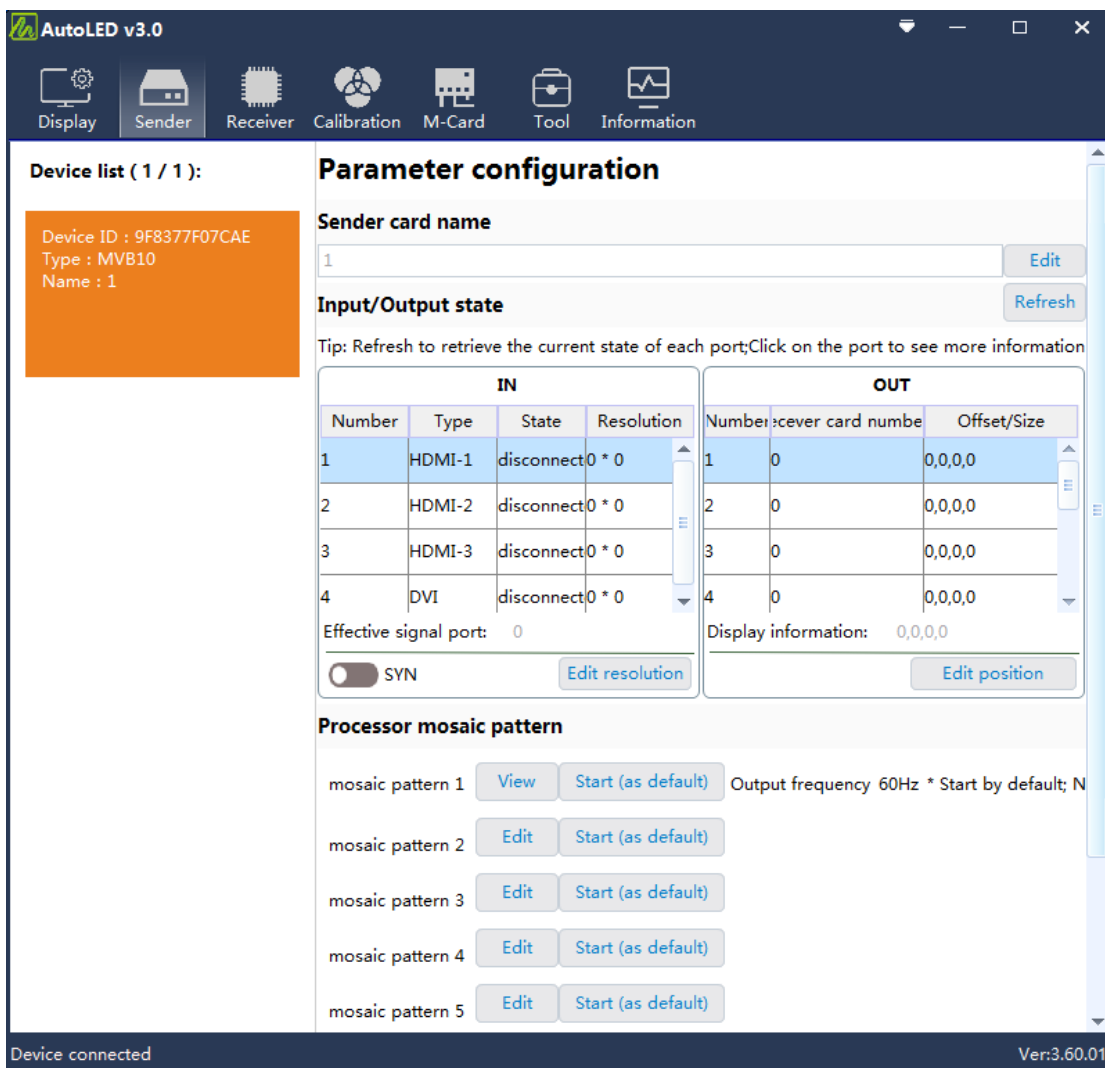


Figure 4-1-4 2in1 Video Processor

(7) 2In1 Video Processor Signal Source Synchronization

Check the “Synchronization” button to edit the resolution, then all the resolutions will be the same, as shown in figure 4-1-7;

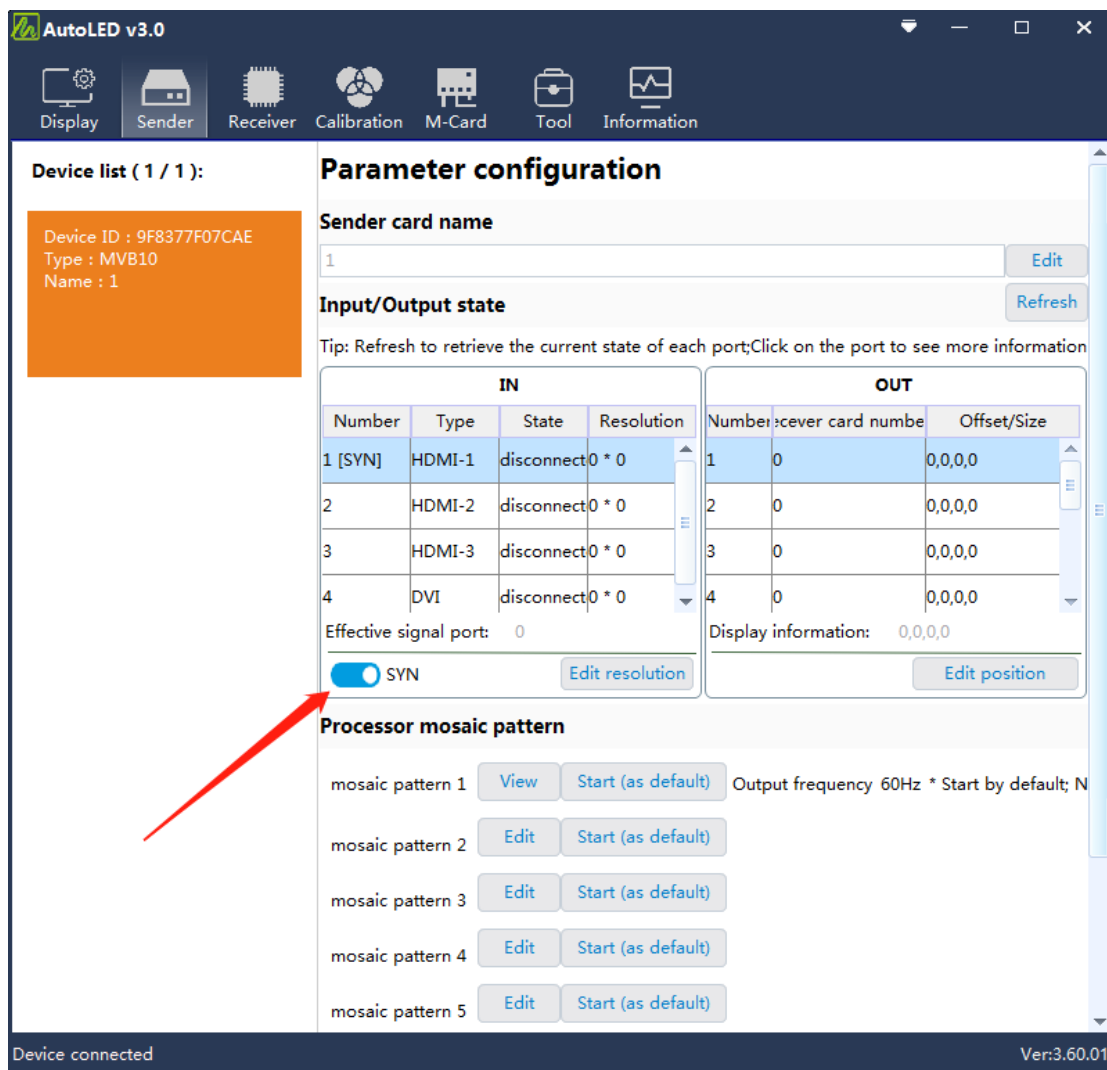


Figure 4-1-7 Resolution Synchronization

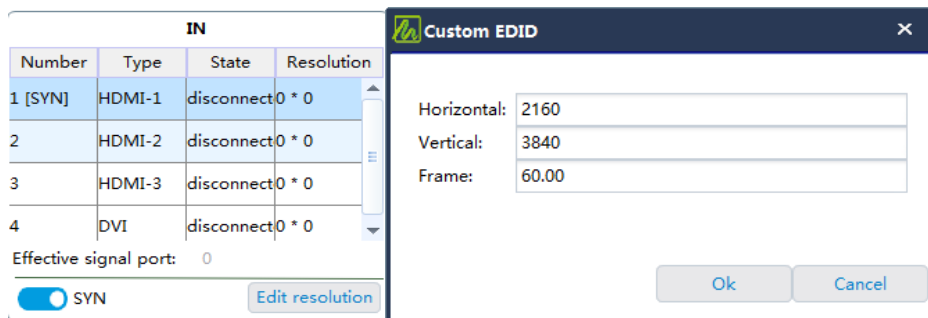


Figure 4-1-5 editing video resolution

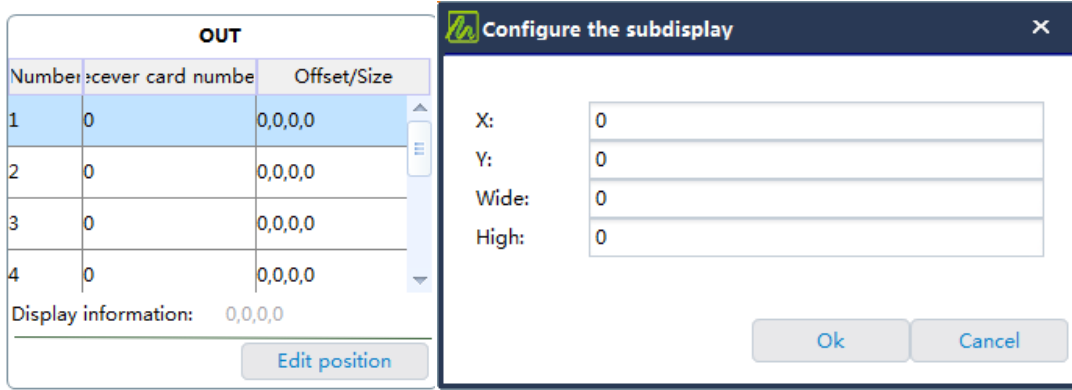


Figure 4-1-6 Editing Output Positions

(7) Image splicing mode

Select the Splicing Mode that you wanna edit then click the “edit” button, as shown in figure 4-1-7;

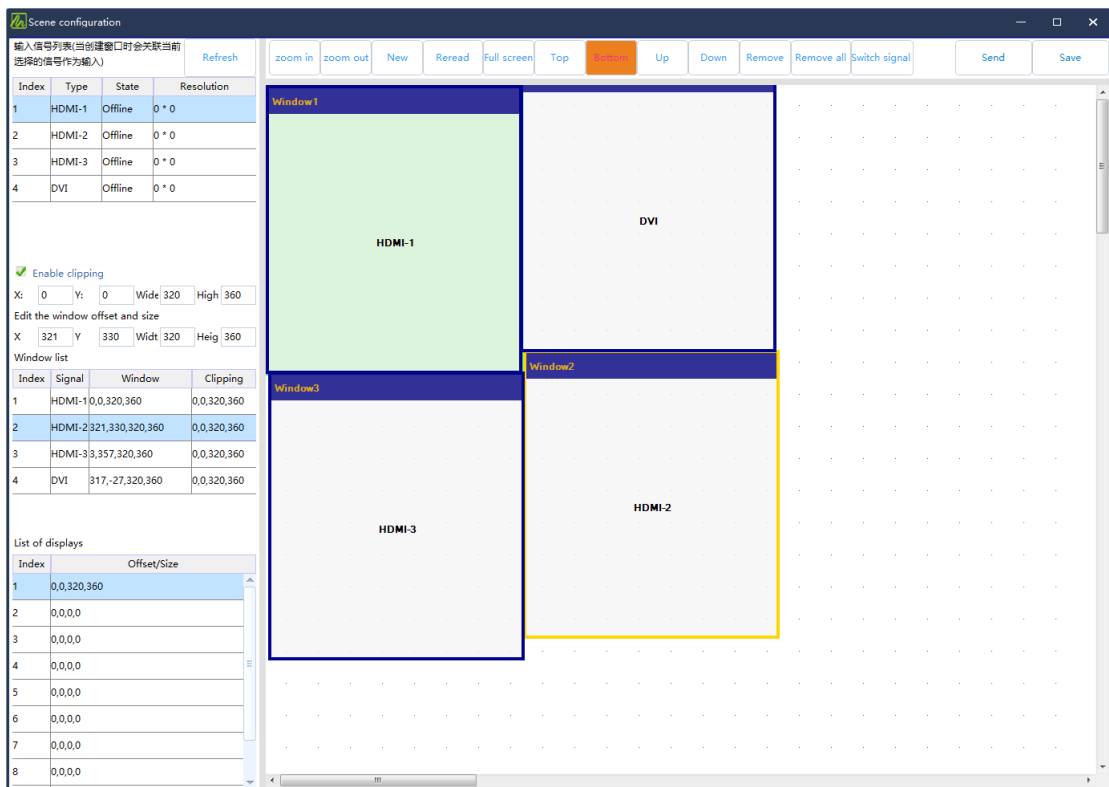


Figure 4-1-7 Image Splicing Mode Editing

To select the signal source in the upper left corner, you can edit the windows at the canvas, you can freely drag or adjust the size of the windows, when it's all done, just click save and send.

4.2 Normal Debugging(Normal Mode)

4.2.1 Smart Settings

Operation Steps:

(1) To click the “Normal Mode” on the software, and then goes to the screen configuration interface, on the lower left corner, click the “smart setting” to enter into the “Smart Parameters Settings”, and then enter the corresponding parameters according to the actual situation of the current LED module, as shown in figure 4-2-1:

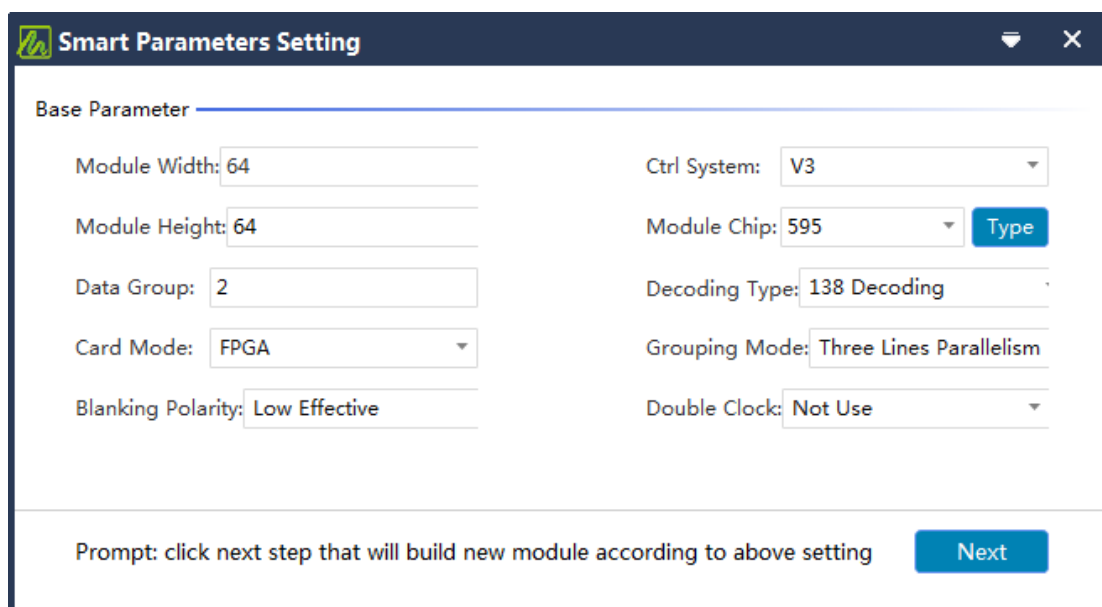


Figure 4-2-1 Normal Mode-Smart Parameters Setting

- **Module Width/Height:** Enter the actual pixel width/height of the current module.
- **Data Group:** To check the interface definition of the data input port, normally it is calculated according to the actual number of data lines and the grouping method of the module. Generally it is three-wire parallel, so one RGB is a set of data. For example, if the module has two sets of RGB, then the data group (set) of the module is 2.
- **Card Model:** The type of receiving card currently used for

debugging, you can directly view the identification on the receiving card.

- **Blanking Polarity:** *Switch status : "low effective" or "high effective", generally it will be defaulted.*
- **Ctrl System:** *According to the current receiving card type, to select T6 or FPGA.*
- **Module Chip:** *Select the type of driver chip used on the current module.*
- **Decoding Type:** *Select the corresponding decoding type according to the module chip.*
- **Grouping Mode:** *Check the interface definition of the data input port of the current module. If there are three color signal data of R\G\B (red, green and blue), (and the red, green, and blue light driver chips controlled on the module are connected separately, there is no serial connection between the red, green and blue chips), then the grouping mode is selected as "three-lines parallelism "; if there is only one color signal data or only one R data on the module (except for monochrome screens, and the chip that controls the red, green and blue LED lights is parallel connected), then select "RGB Serial".*
- **Double Clock:** *When debugging double-clock modules, D, E, and F signals can be selected as the second clock, and when comes to the debugging of the conventional modules, then the double clock function is not used by default.*

(2) Click “Next” to check the “data polarity” and “OE polarity”, normally they will be set by default, so just all the way click “next” until you get to the “ Scan Line” Interface. Select the scan line according to the actual display of the current module, as shown in Figure 4-2-2.

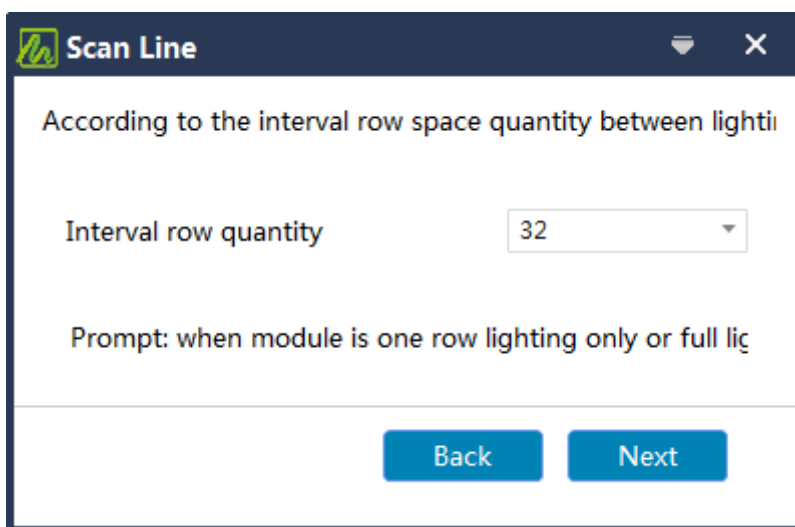


Figure 4-2-2 Normal Mode- Select Scan Line

(3) Click “Next” to get to the “ Data Line Color” interface, and then click status 1-3 respectively, and select the corresponding color according to the actual color that displayed on the module, as shown in Figure 4-2-3

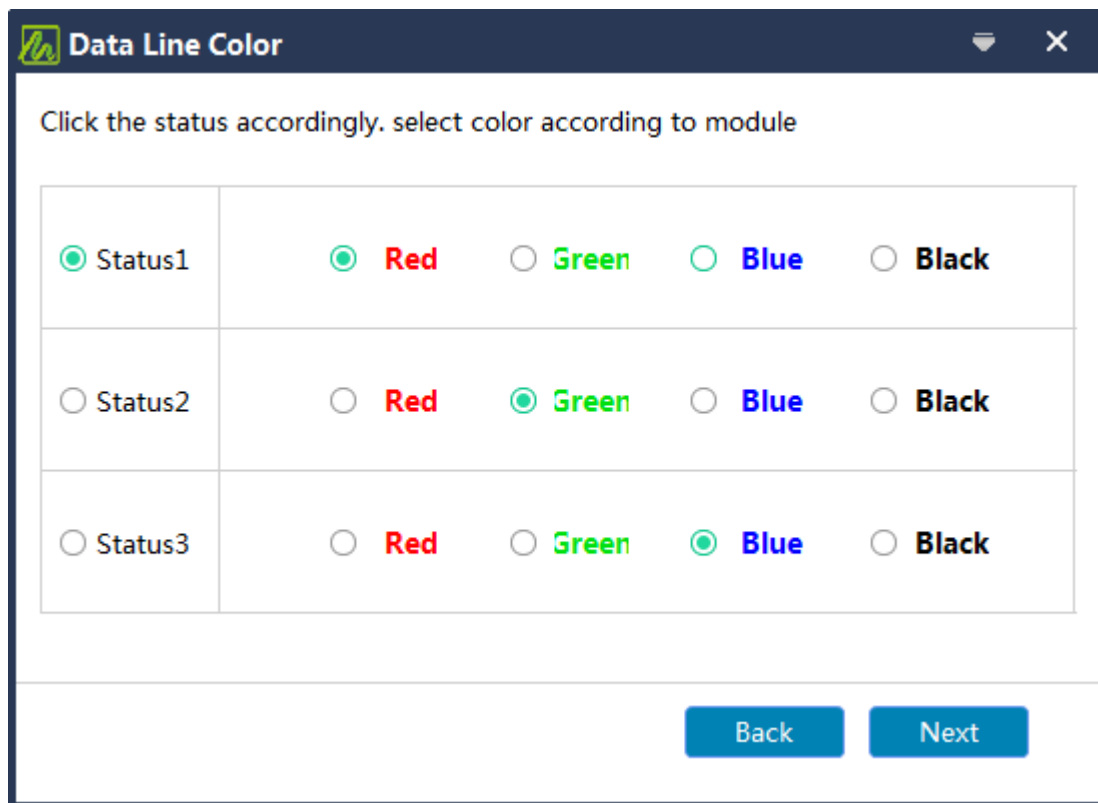


Figure 4-2-3 Normal Mode- Select Data Line Color

(4) Click “Next” to get to “Smart Setting” Interface. To trace the pixels according to actual display of the current module (If the module has no pixel flicker, please connect the LED module to the first data port of the receiving card or change the data line to all ports, or try to insert a virtual dot.), After the smart setting is completed, a completion window will be prompted, click “OK”, then click the “Finish Trace” button, and click “OK” to send the data to the receiver card, as shown in Figure 4-2-4.

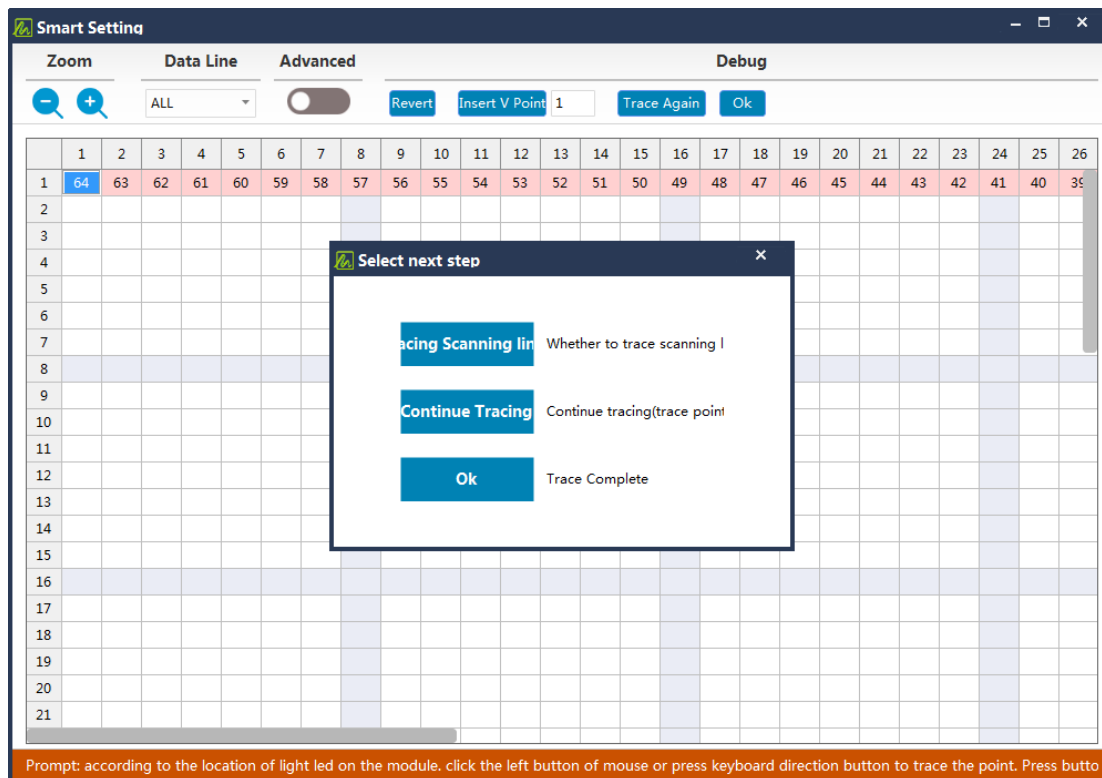


Figure 4-2-4 Normal Mode-Trace Complete

4.2.2 Receiver(Receiving Card) Configuration(Setting)

To complete the receiver configuration through the smart setting, or click “Open” to load the saved cabinet/module file(box-config) to get to the “receiver configuration”, as shown in figure 4-2-5.

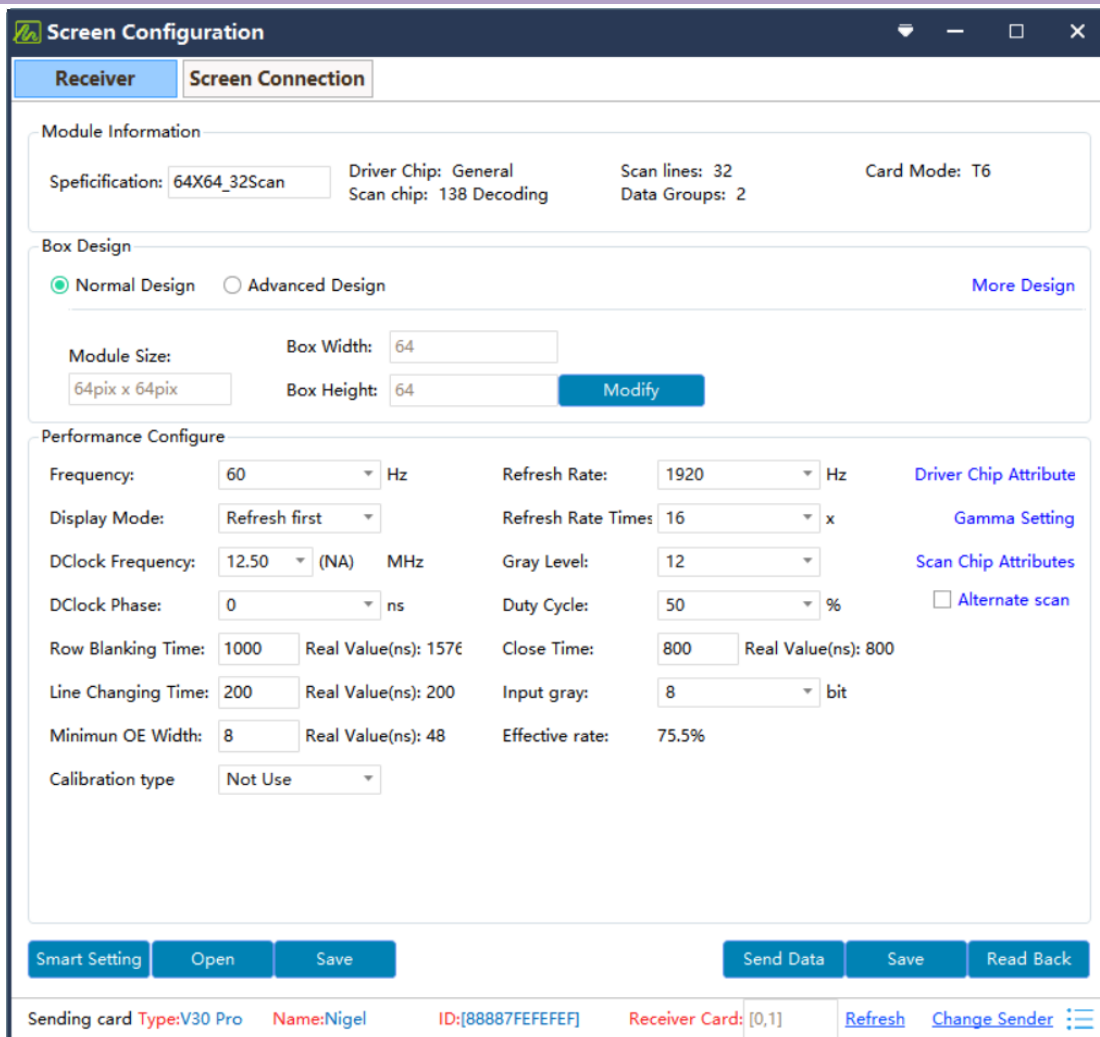


Figure 4-2-5 Receiver Configuration

(1) At the “Box Design” to select the “Normal Design”(normally the default will be the normal design”, click the “modify” button, to set the width and height of the box(cabinet) according to the actual loading status of the receiving card, as well as the cascading connection mode (cascade direction) of the flat cable and its output mode, as shown in figure 4-2-6.

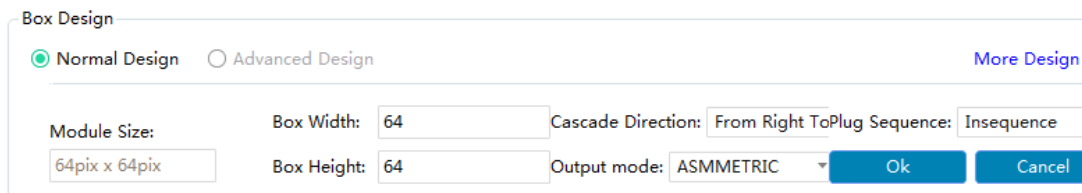


Figure 4-2-6 Box Design-Normal Design

Output Mode : There are “ASYMMETRIC, SYMMETRIC,TRIPPLE

STRIP, QUADRUPLE STRIP” this 4 output modes. According to the actual needs, the performance of the receiving card can be fully utilized to make the display screen have a higher refresh rate. The following is an example of the module cascade direction from right to left.

- ***ASYMMETRIC:*** *Total columns of data, from top to bottom will be just 1 column.*
- ***SYMMETRIC:*** *There are 2 columns of the data with the same loading capacity of the width and height (The number of data columns is divided into 2 columns and the data contains the same width\height)*
- ***TRIPPLE STRIP:*** *There are 3 columns of the data with the same loading capacity of the width and height(The number of data columns is divided into three columns and the data contains the same width\height)*
- ***QUADRUPLE STRIP:*** *There are 4 columns of the data with the same loading capacity of the width and height(The number of data columns is divided into 4 columns and the data contains the same width\height)*

(2) To design the complex box. To select the advanced design at the box design interface and click “ advanced layout” to get to the “box advanced layout” interface where you can edit and design the complex box. As shown in figure 4-2-7.



Figure 4-2-7 Box Advanced Layout

Swap or Exchange the HUB Port: Select the corresponding module, and then select the actual connected HUB port from the drop down list to get it exchanged, or you can get it exchanged by directly dragging the module.

Data Group Exchange: Click the "Edit" button under the HUB column to enter the data address editing interface, as shown in Figure 4-2-8. In this interface, check the data line output test, find the HUB port corresponding to the module in the "JX" column, and change the data line address in the "Exchange Address" column until the color of the module is the same as the color in the "Address" column, and also when the HUB

port position is the same as the module layout , it means the change is correct. Similarly, after all the HUB address lines are defined, uncheck the box "Data line out test", and finally click the "OK" button to exit the data line exchange editing interface.

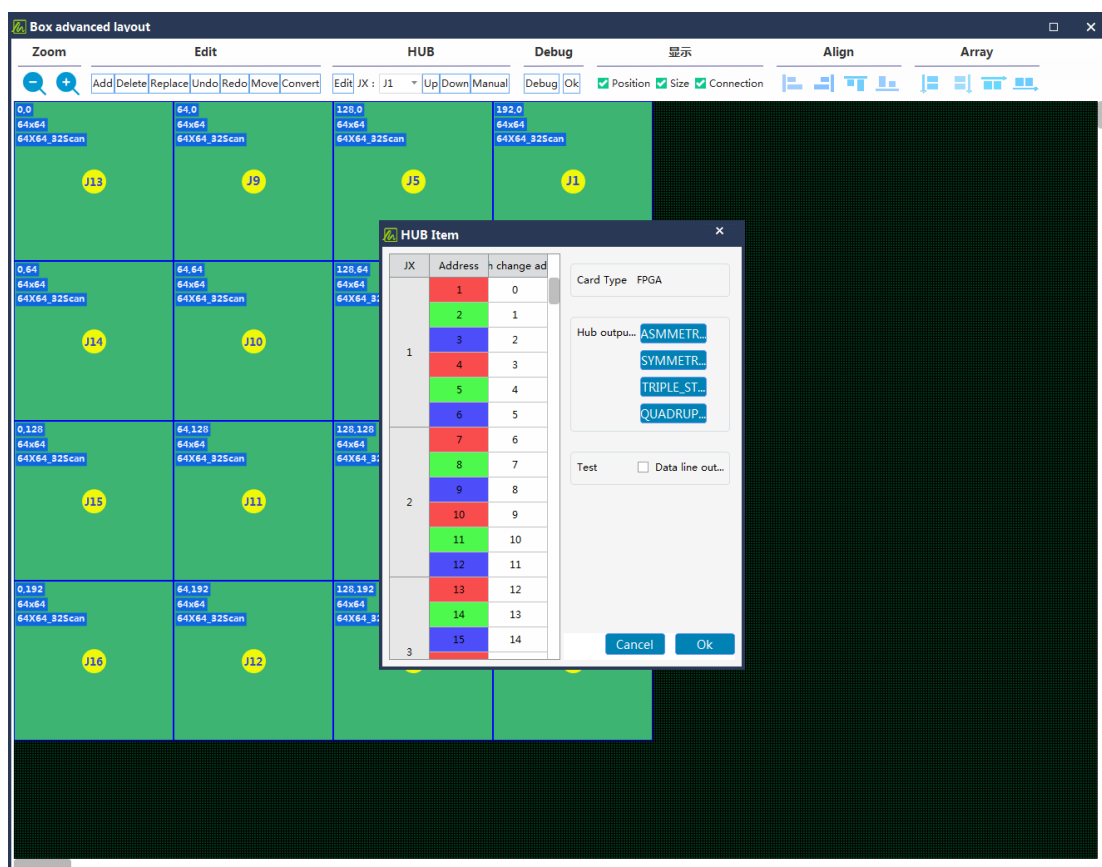


Figure 4-2-8 HUB Editing

(3) After configuring the loading width/height of the receiving card, the system will automatically calculate the performance/configuration. If you are not satisfied with the display effect, you can also manually change the parameters, as shown in Figure 4-2-9.

The screenshot shows a 'Performance Configure' window with the following settings:

- Frequency: 60 Hz
- Refresh Rate: 1920 Hz
- Display Mode: Refresh first
- Refresh Rate Times: 16 x
- DClock Frequency: 12.50 (NA) MHz
- Gray Level: 12
- DClock Phase: 0 ns
- Duty Cycle: 50 %
- Row Blanking Time: 1000 Real Value(ns): 1650
- Close Time: 800 Real Value(ns): 804
- Line Changing Time: 200 Real Value(ns): 204
- Input gray: 8 bit
- Minimum OE Width: 8 Real Value(ns): 48
- Effective rate: 75.5%
- Calibration type: Not Use

Additional options on the right include: Driver Chip Attribute, Gamma Setting, Scan Chip Attributes, and an unchecked checkbox for Alternate scan.

Figure 4-2-9 Performance Configure

- **Refresh Rate:** An important indicator of the display effect for the Led Screen. Increasing the refresh rate can improve the effect of the water ripples that appear when the camera is used to take pictures.
- **Display Mode:** There are two types: refresh first (priority) and gray first (priority). Refresh rate First (priority): In this mode, the brightness efficiency will be sacrificed, which can greatly increase the module refresh rate; Gray First (priority): This mode will have a better grayscale effect when the brightness is low.
- **Refresh Rate Times:** High refresh algorithm, to improve the visual refresh rate, the default is 16.
- **DClock Frequency:** It is related to the circuit design of the LED module and the driver chip it has featured. If a high refresh IC is used and the design is reasonable, the higher the clock that the module can reach, the higher the gray scale and the refresh frequency will be supported while the load area remains the same.
- **Gray Level:** Increase the gray level according to the requirements of the display screen. The higher the gray level, the better the picture level and the better the picture quality. Generally it is 12~14bit, 12bit grays level is equal to 2 to the 12th power, and the gray level is equal to 4096-level grayscale.
- **DClock Phase:** Set the timing starting point of the clock. If the screen has flashing points, blurring and other abnormal phenomena, you can adjust this item. Generally, it is 12.5~17.86.
- **Duty Cycle:** Refers to the duty cycle of the clock phase. Changing this data can

increase the clock of the scan clock phase , generally it will be set to 50%.

- **Row Blanking Time/Line Changing Time:** *Scanning one line and then to scan the next line of data switching time and position, mainly to adjust afterglow of the screen, if the afterglow is serious, you can increase the value of the line changing time, generally take the default value.*
- **Minimum OE Width:** *The shortest response time, when the refresh cannot be effectively improved, try to reduce this value, but if the value is too small, it will easily lead to a low gray and color cast effects.*
- **Gamma Setting:** *Gamma represents the measurement parameter of the original signal, which refers to the distortion of the image output to the input signal, and the Gamma value refers to the specific numerical value of this distortion. Adjust the required Gamma on the Gamma setting column. The default value is 2.8. You can also use the custom Gamma value to edit or load an external Gamma table, as shown in Figure 4-2-10. After debugging, click the "Send" button to save the adjustment effect to the receiving card.*

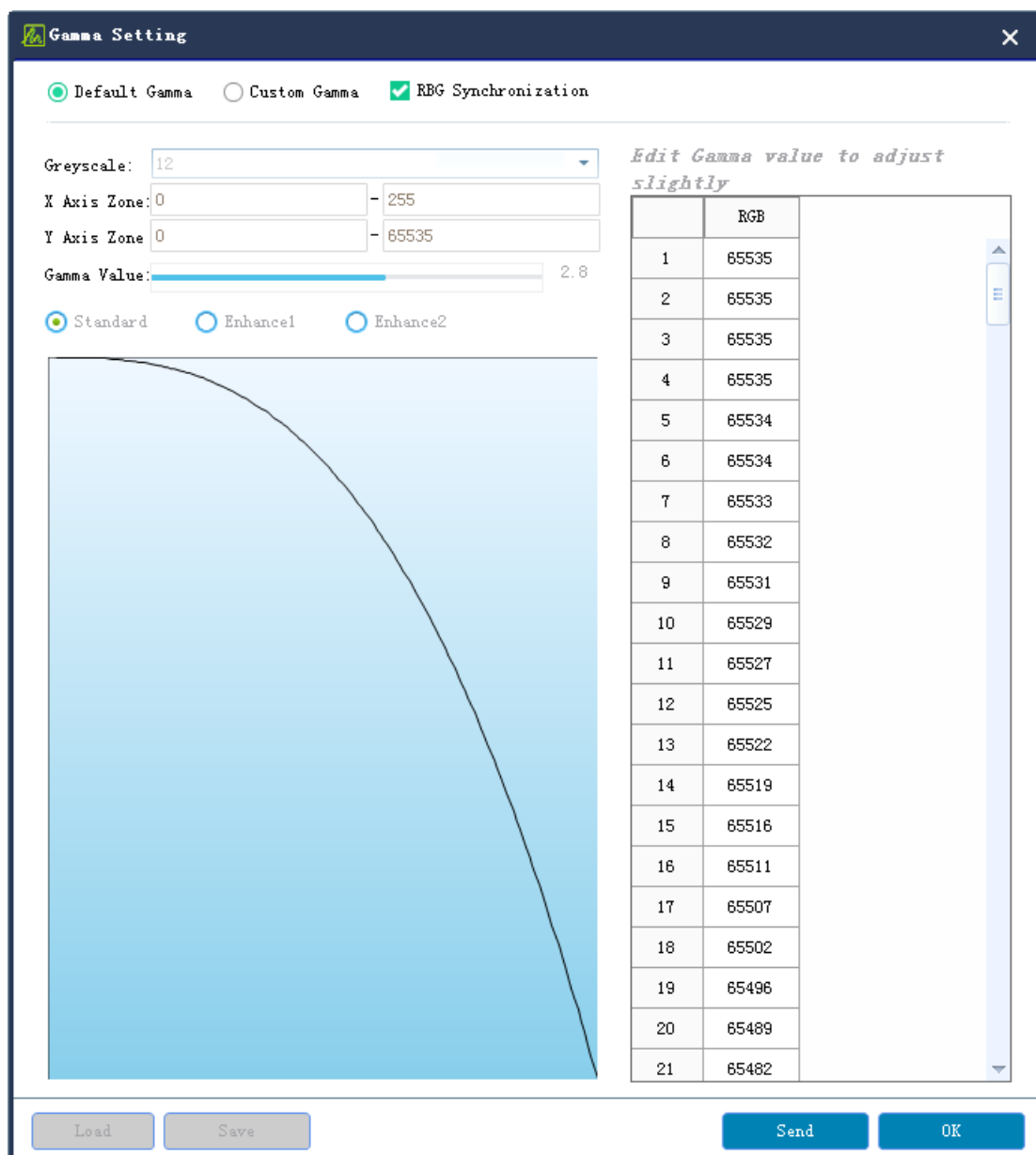


Figure 4-2-10 Custom Gamma Value

(4) Click the "Send Data" button to send the receiving card program to the receiving card. When sending data, you can designate a network port or a designated card to send, or reset the receiving card position and to reset all receiving card positions to zero so as to display the same position. Observe whether the cabinet(module/box) is displayed normally. When satisfied, click the Save button("Solidify Data")to solidify the data to the receiving card to prevent data loss

after the receiving card is powered off and restarted. Finally, click the "Save " button to save the cabinet(module/box) configuration file to the computer.

4.2.3 Screen Connection

(1) After the user configures the receiver (receiving card)parameters, click the "Screen Connection" button in the menu bar of the receiver configuration interface to get to the screen connection interface, as shown in Figure 4-2-11.

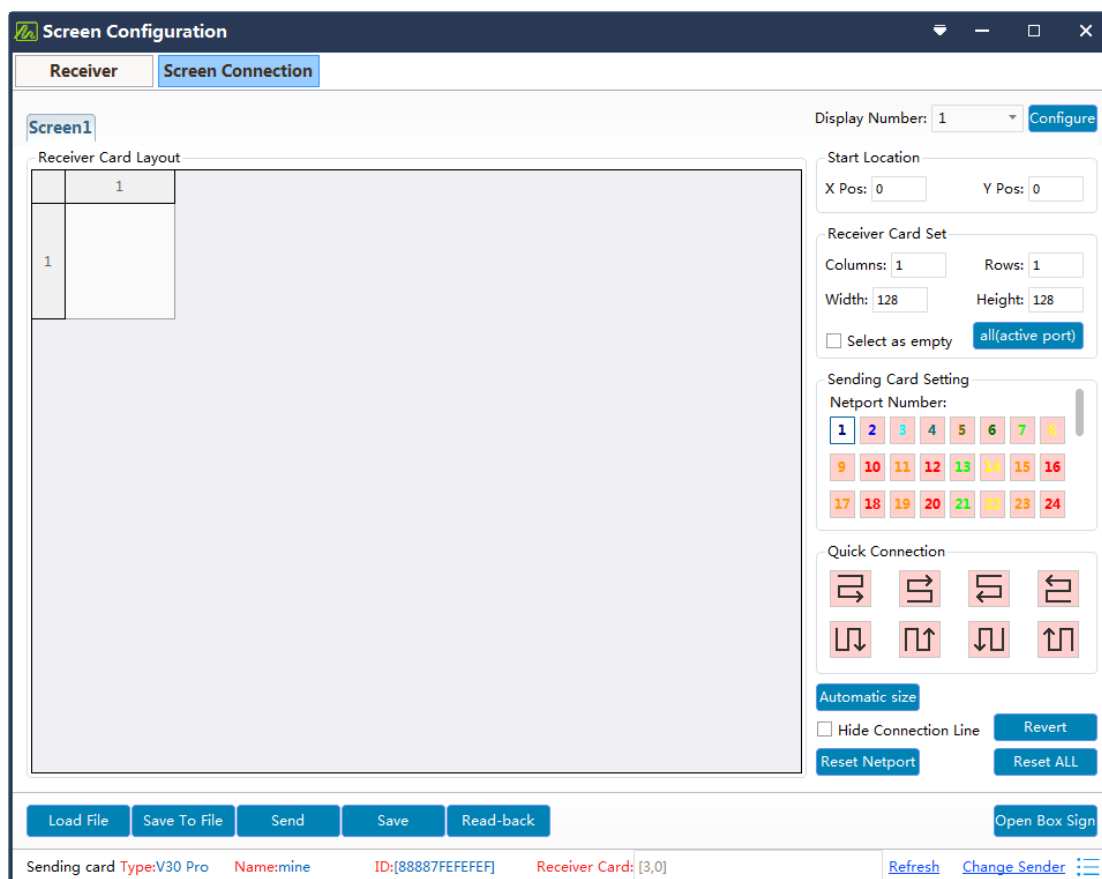


Figure 4-2-11 Screen Connection Setting

Tips: When connecting to the current display screen, first click the "Refresh" button in the lower right corner to refresh all the receiving cards carried by the current sending card, and check

whether the number of receiving cards is the same as the actual number of the receiving cards that connected. If it is inconsistent, please check whether the hardware connection is normal. When connecting multiple sending cards, please switch the sending card and find the corresponding sending card for debugging.

- **Load File:** *To load the display configuration file that is saved on the control computer.*
- **Save to file:** *Save the display configuration information to the computer in (*.dcc) format files.*
- **Send/Save(Solidify):** *Send the screen configuration information to the sending card and the receiving card. After the sending is completed, confirm to save it to the device, and solidify the screen configuration information into the receiving card and sending card, therefore it will not be lost after power off.*
- **Read-Back:** *After clicking this button, the screen connection file that is previously saved in the sending card will be read back, which is convenient for customers to get back the configuration files and get the screen connected quickly.*
- **Open Box Sign:** *You could check the sign of the Box(Cabinets/Module), so it will be convenient for the connection of the screen.*
- **Current Sending Card Information:** *The type, name, and ID are used to distinguish the sending card, and the "name" can be edited in*

the Sender (sending card) interface.

- **Receiver Card:** The quantity of the receiving cards that carried by the sending card.
- **Change Sender:** When there are multiple sending cards, you can click the "Change Sender " button to enter the sending card selection interface, as shown in Figure 4-2-12.

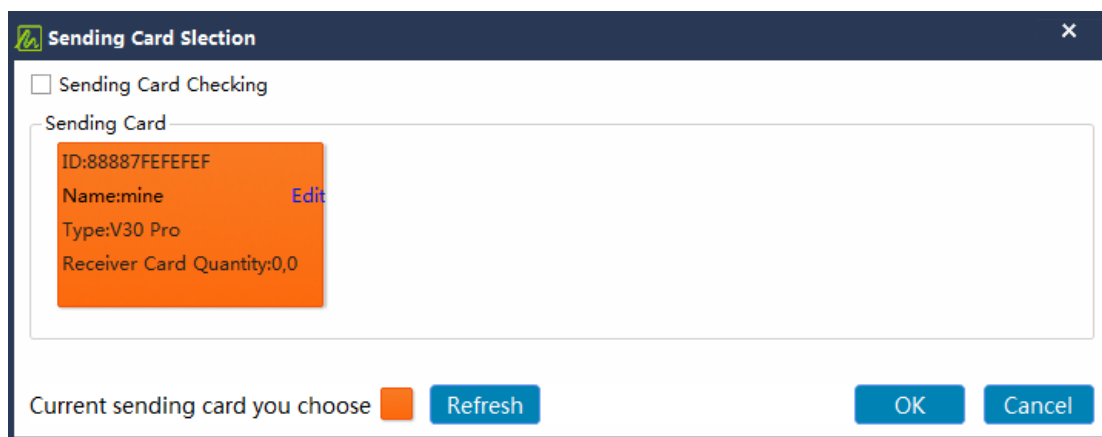


Figure 4-2-12 Sending Card Selection

Click the "Refresh" button to refresh the receiving card carried by the sending card, check the “sending card checking”, and when the sending card is selected, the area of the receiving card carried by the selected sending card (the box that has been configured with data) will flash, which is convenient for quickly finding the sending card corresponding to the loaded area. After confirming the area, you can also edit the name of the sending card. Click the "Edit" button to edit directly.

(2) In the “screen connection” interface, set the cascading mode, width and height of the receiving card according to the actual situation of the large screen (each receiving card has a different loading width and height), as shown in Figure 4-2-13.

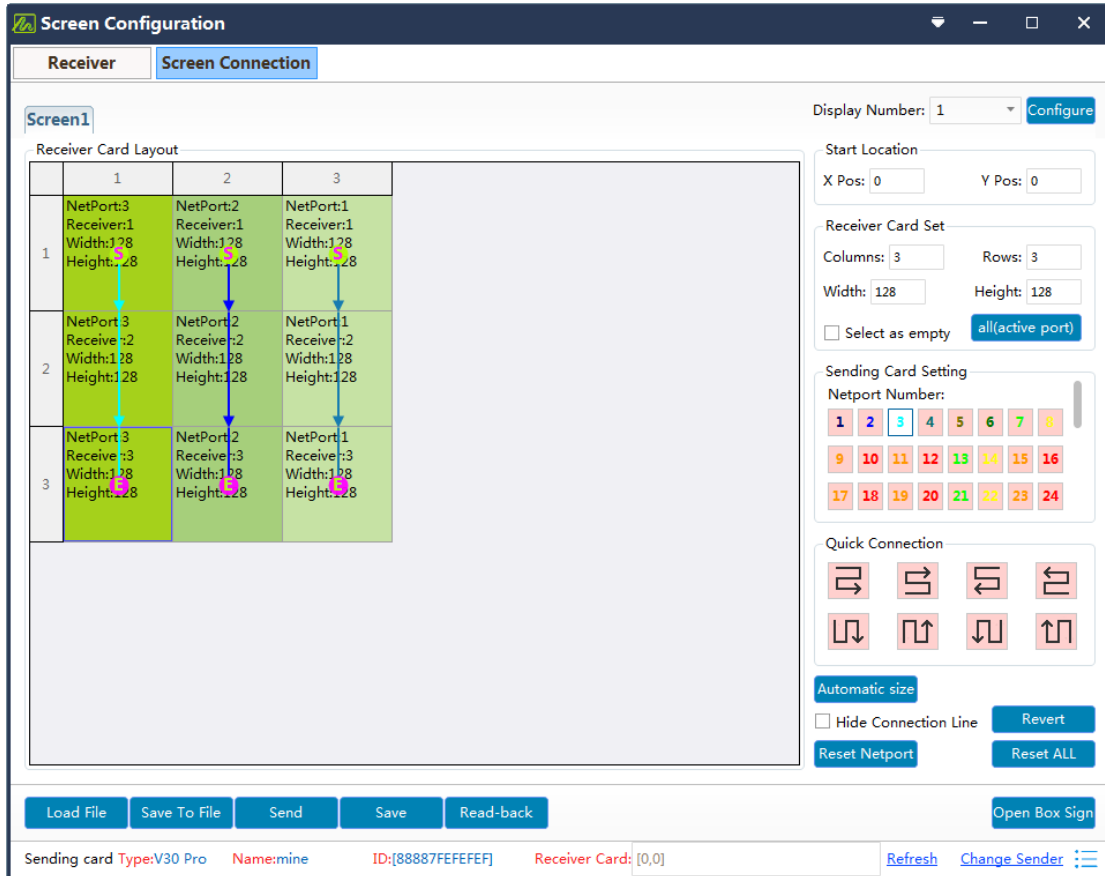


Figure 4-2-13 Receiving Card Cascading Connection Mode

- **Display Number:** According to the actual needs, select the number of display screens, and click "Configure" to complete the setting. If the screen connection page that has been configured appears, you can modify it according to the actual situation or reset it after clicking the button.
- **Start Location:** The interception position of the input signal source of the LED display. The default state is (0,0), that is, the LED display starts from the (0,0) of the video source.
- **Receiver Card Set:** According to the quantity of the actual connected receiving cards, to set the rows and lines of the receiving cards and the width /height of each card.

- **Select as Empty:** When the Cabinet(box) position needs to be left blank, check the "Select as empty", when it's all done just unchecked it , the operation will be finished.
- **All(Active Port):** Set the size of all cabinets connected to this network port to the current column width and column height.
- **Sending Card Setting -Net port Number:** To choose the access Ethernet port of the sending card.
- **Quick Connection:** When the entire screen is loaded with only one network cable and the network cable of the receiving card is cascaded regularly, you can use fast screen connection.
- **Hide Connection Line:** When the “ Hide Connection Line” is checked, the connection information will be hided.
- **Revert:** Undo the last operation.
- **Reset Netport:** Reset all settings related to the current network port.
- **Reset ALL:** Reset all settings related to all network ports.
- **Connect HUB:** If the HUB(Splitter) is connected to the large screen, the following operations can be performed.
 - ① Check the “Connect Hub”
 - ② Select the access network port of the sending card, configure the address of the “HUB”.
 - ③ And then select “ HUB Address” to connect the screen, as shown in figure 4-2-14.

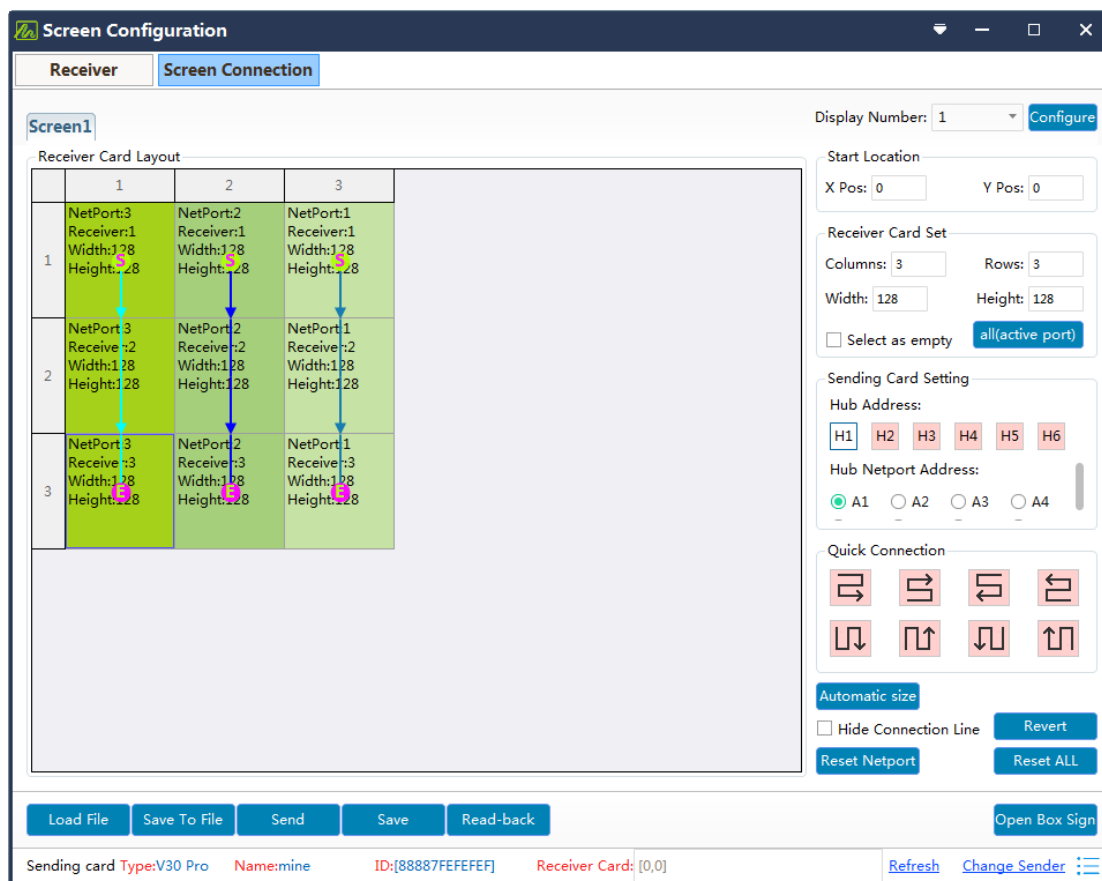


Figure 4-2-14 HUB-Screen Connection

(3) Dual Card Backup

When dual-card backup is required, the main card directly select "as the main sender" and save it to the device; click "change sender" to switch to the backup card and then send, at this time select "as the backup sender" to send and save to the device. As shown in Figure 4-2-15.

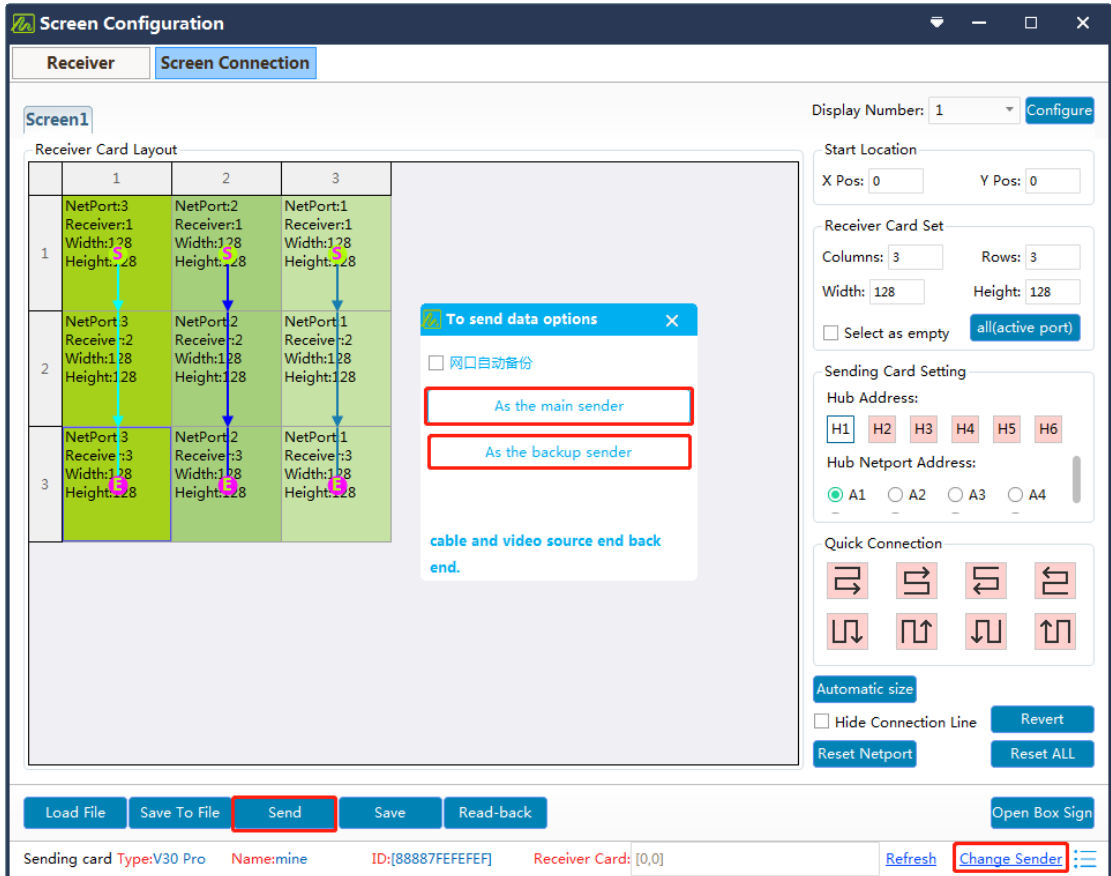


Figure 4-2-15 Dual Backup

4.3 Complex Mode

The Complex Mode is a screen connection adjustment tool that specially developed for special-shaped display screens. You could use it to quickly and intuitively complete the connection of any module with any size as well as the network cable arbitrary cascading connection of the receiving cards.

Step 1: File (Load the cabinet file). Load all the cabinet configuration files required by the large screen (file format: .box-conf)

(1) Click the "complex mode" on the main software interface to enter the complex debugging interface window "Led Display

Designer”, then click the “+” button to get to the “Add Method” Interface, and you can then choose the loading method of the screen configuration file , as shown in Figure 4-3-1.

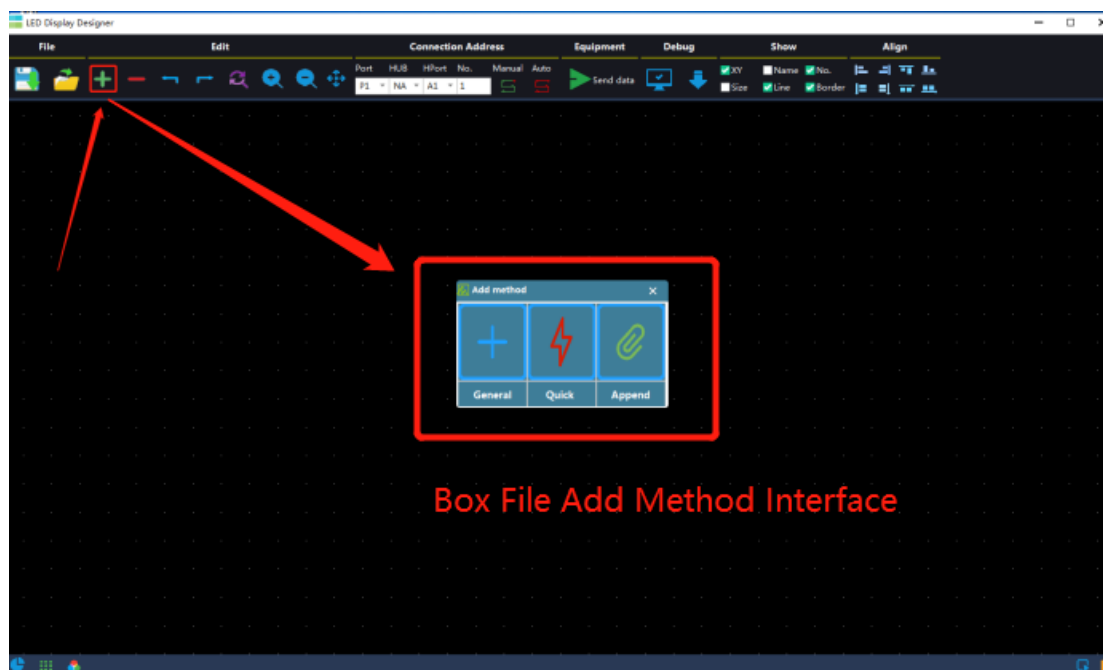


Figure 4-3-1 Configuration file loading method

(2) Add Box (Cabinet) File: When the screen to be debugged is composed of multiple types of Boxes(cabinets) (box size, chip type, module design, etc.), click to select the first loading method “ General” to enter the “add box” interface, and click “Browse” on this interface to load the box (cabinet) configuration file, as shown in Figure 4-3-2.

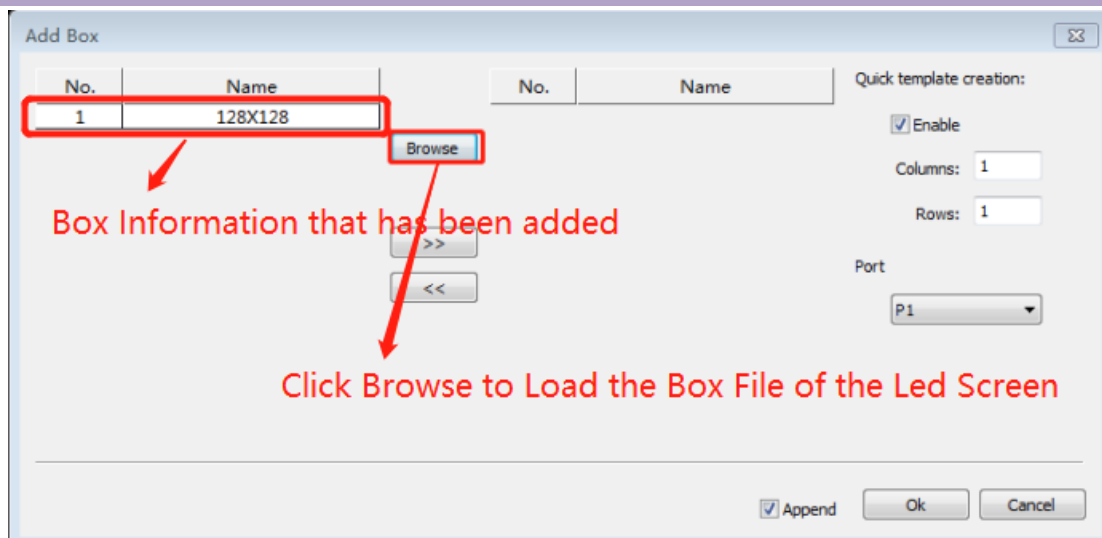


Figure 4-3-2 Add Box Configuration Files

After the box file is loaded, select the configuration, click the “right” icon to quickly create a template, and enter the “columns and rows values” in the “quick template creation” interface to add the large-screen module array. In the “Port”(designated target network port)column, you can classify the network ports of the modules added this time, and select the corresponding network ports according to the actual situation. Click the “OK”button to complete the addition of the box (cabinet) configuration, as shown in Figure 4-3-3.

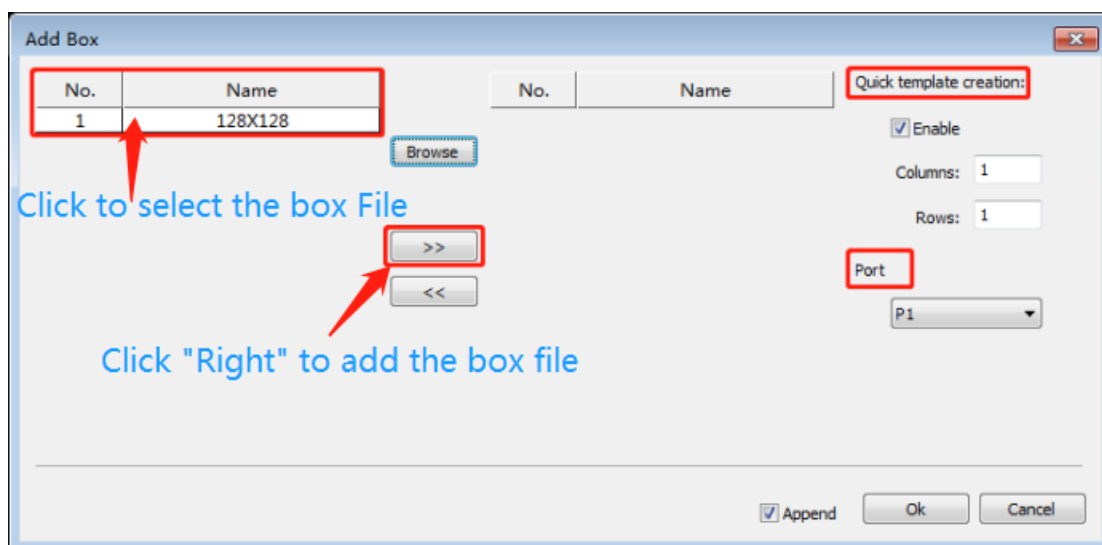


Figure 4-3-3 Quick Template Creation

When the debugged display has only one box (cabinet) configuration, click to select the second loading- “Quick” method to enter the “quick add” interface, click “Browse” on this interface to load the box (cabinet) configuration file, in the “box layout” column, to enter the columns and rows values to add the array of large-screen modules. In the “port” column, you can classify the network ports of the modules added this time, and select the corresponding network ports according to the actual situation. Click the “OK” button to complete the addition of the box (cabinet) configuration, as shown in Figure 4-3-4.

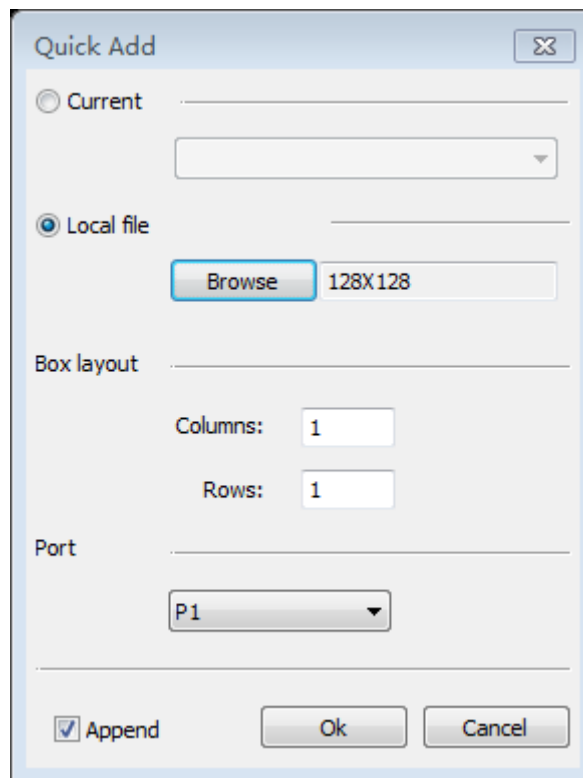


Figure 4-3-4 Quick Add Box Configuration

When this screen connection needs to be merged with another screen connection, you need to click to select the third loading method- “Append”, and you can directly add the screen connection file.

Step 2: Edit (Layout of the screen box(cabinet))Move the

corresponding box (cabinet) position according to the actual layout of the screen box (cabinet), as shown in Figure 4-3-5.

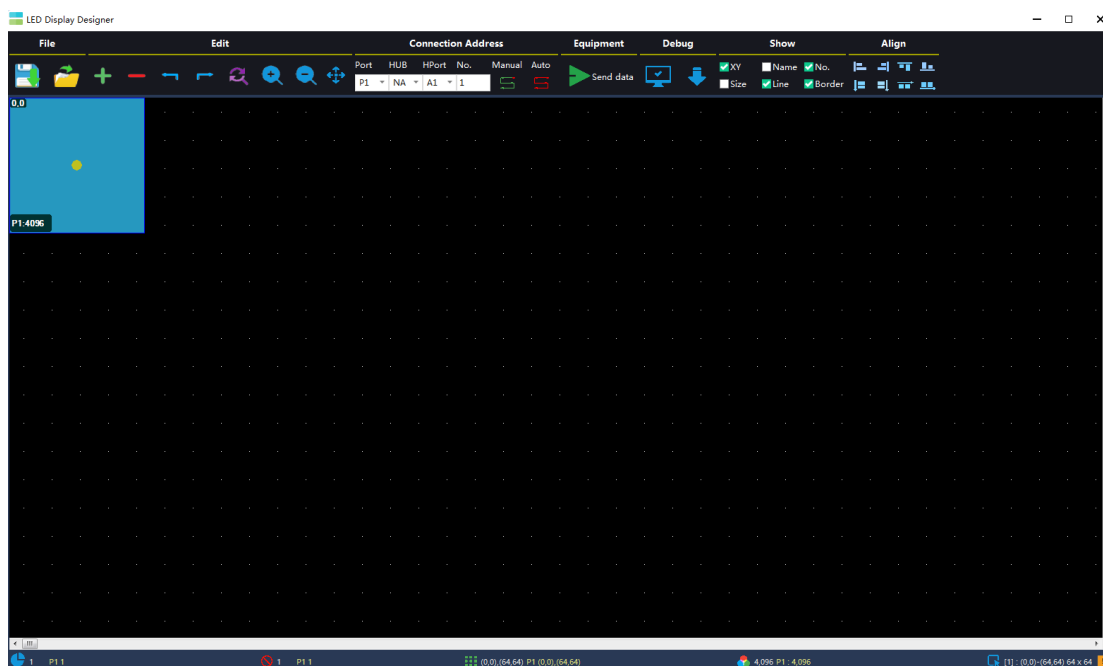


Figure 4-3-5 Layout of the Screen Box

Step 3: Connection Address(Set the network port loading of the sending card and its connection sequence of the receiving card).

(1) **Set the receiving card that carried by the network port of the sending card:** Select the receiving card connected to each network port of the sending card, and set the network port of the sending card to which the receiving card belongs, as shown in Figure 4-3-6.

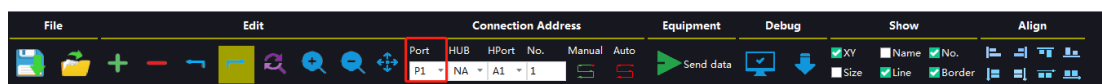


Figure 4-3-6 Set the receiving card that carried by the network port of the sending card

Set the connection sequence of the receiving card's network cable : Click the "Manual" button, the default starting serial number value is 1, you can set the starting serial number under the "No." column, as shown in Figure 4-3-7.

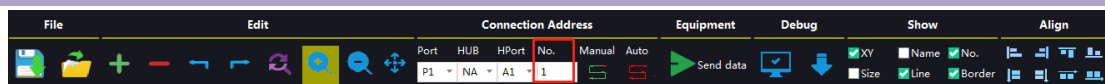


Figure 4-3-7 Set the network cable connection sequence of the receiving card

Select the boxes (cabinets) in sequence according to the actual network cable connection order of the screen's receiving cards. At this time, the box (cabinet) serial numbers will be accumulated in sequence. When the selection is wrong, you can right click the mouse to return to the correct value and continue to select until the setting of the receiving card carried by the network port is completed, and then press the "ESC" key on the keyboard to exit the network port serial number setting, and with the same method to set the receiving card serial numbers of all the network ports, as shown in Figure 4-3-8.

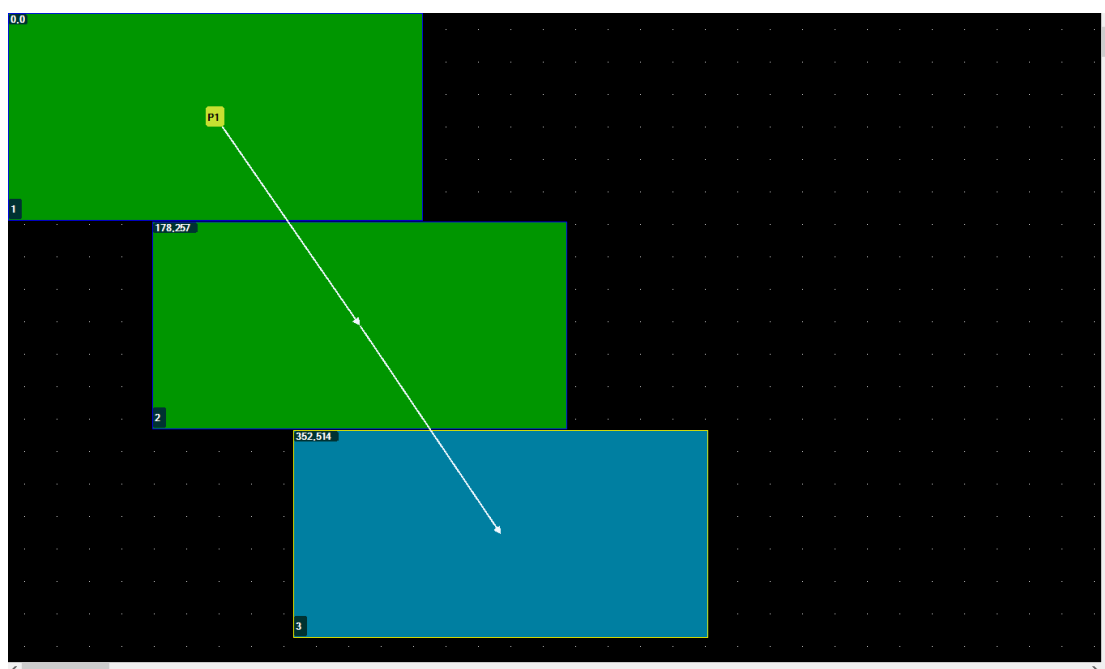


Figure 4-3-8 Receiving Card Serial No. Setting of the network port

(2) **Auto.** Click the "Auto" button to enter the "Connect Automatically" interface. When the Boxes (cabinets) are arranged regularly (rectangular arrangement), the automatic connection setting can

be selected, as shown in Figure 4-3-9.

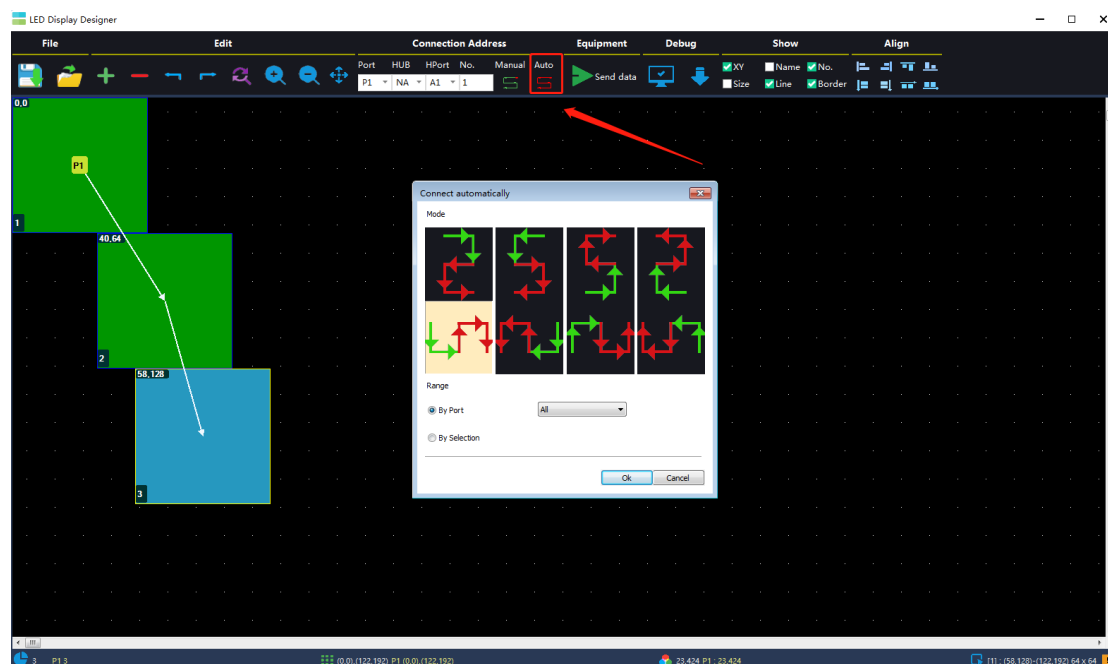


Figure 4-3-9 Network Cable Connect Automatically

(3) **Send Data**: After completing the connection of the led screen, click the "Send Data" button to enter the "send data options" interface. By default, the configuration data and location of the receiving card and the configuration data of the sending card are selected, and then click the "Send" button to send the system configuration files of the led screen, after observing that the display of the screen is normal, click the "Save" button to solidify the screen configuration file to the receiving card and the sending card. You can also send the file of the selected area individually, or group send a single box file , as shown in Figure 4-3-10.

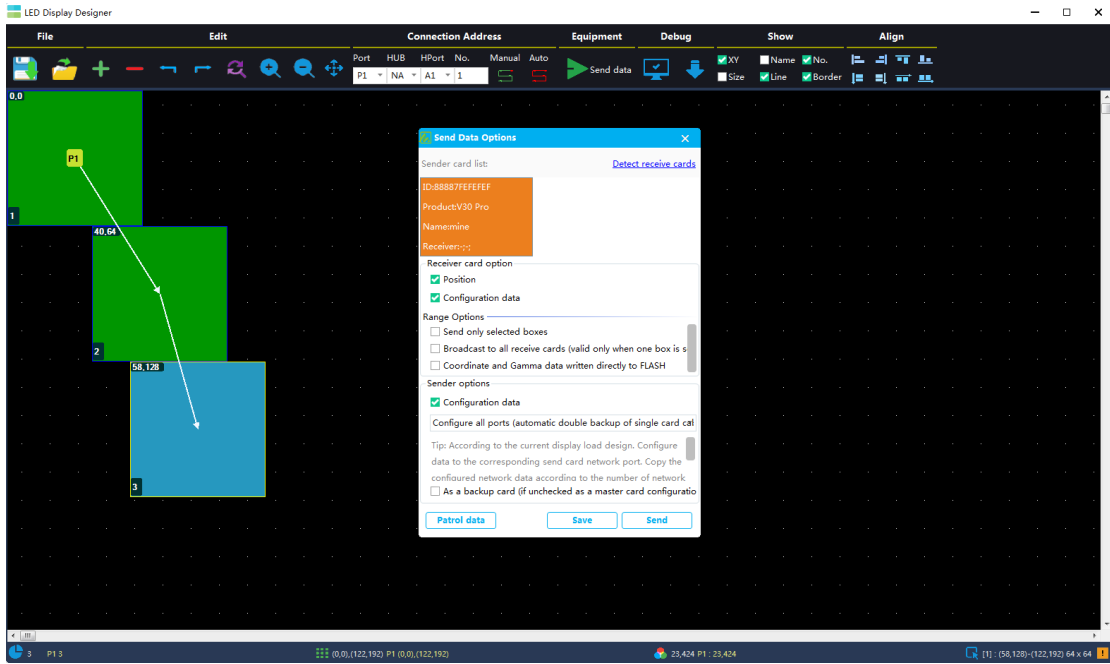


Figure 4-3-10 Send Data Options

Debug (Debugging):

Image Test- Select the sending card and then get to the “debug mode” to open the digital label, red, green, blue, white, horizontal line, vertical line, left slash, right slash, power-on time, gray scale and other debugging tools (FPGA receiving card only supports digital identification), As shown in Figure 4-3-11.

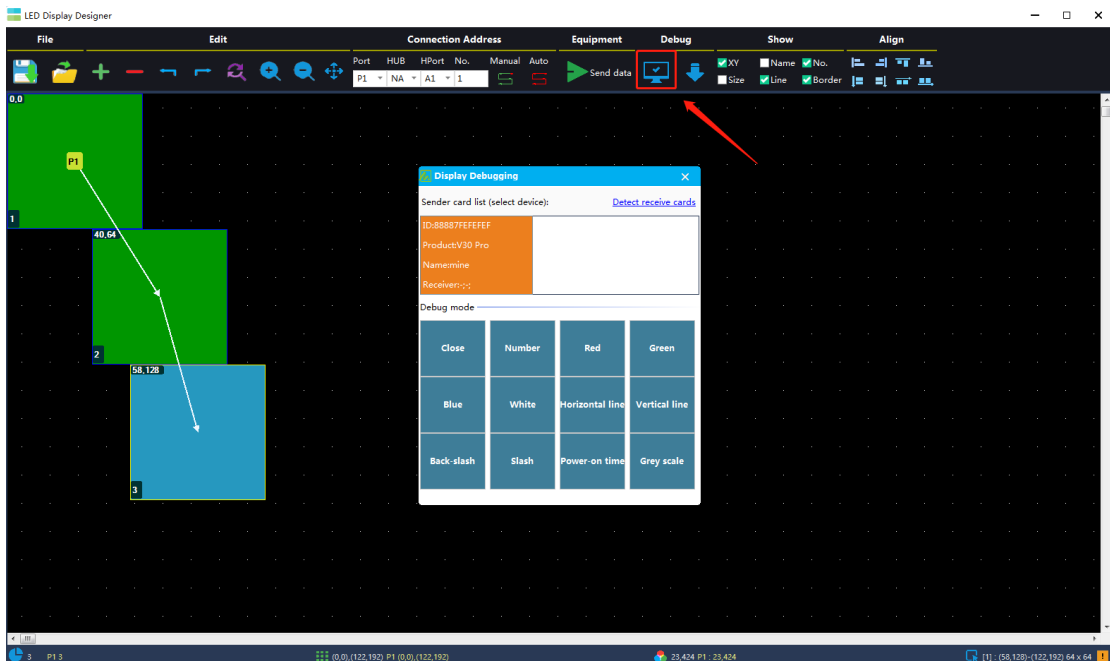


Figure 4-3-11 Image Test(Screen Debugging)

Read Back Box Data-Select the sending card, read back all the parameters and connection positions saved by the receiving card, and the large screen can be connected normally after sending. As shown in Figure 4-3-12.

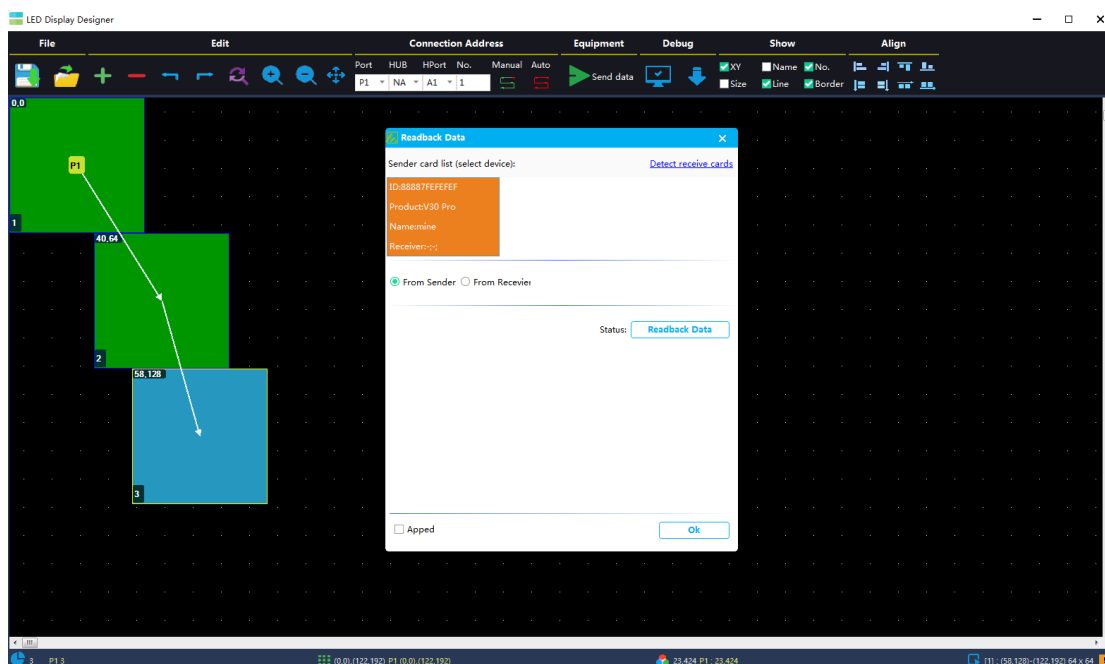
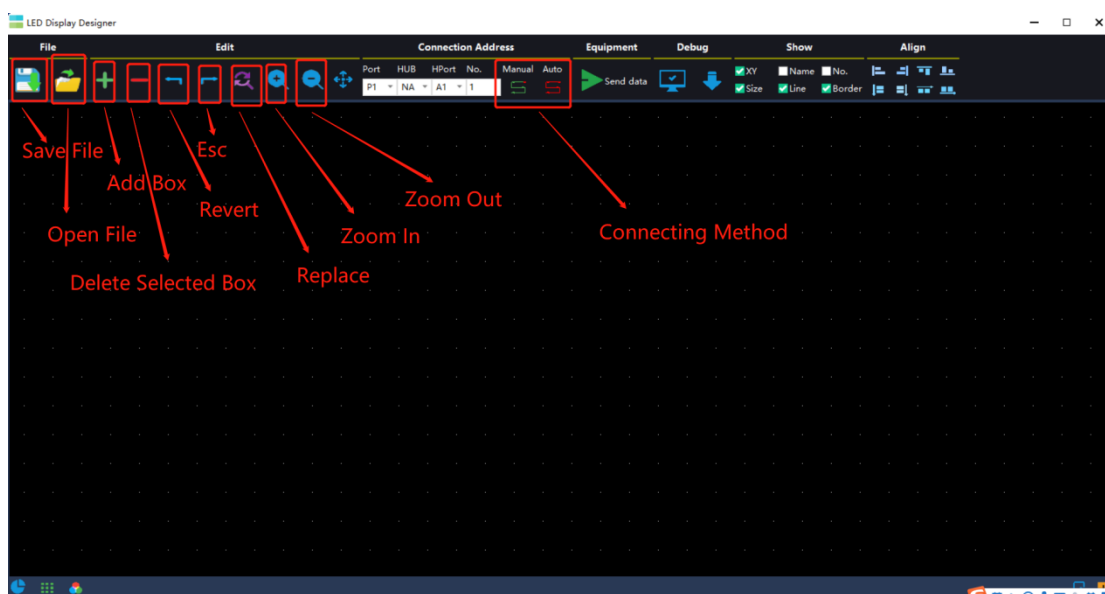


Figure 4-3-12 Read Back Box Data

Note: The Description of Led Display Designer (Complex Mode)Toolbar



4.4 Screen Control(Receiver):Brightness Adjustment

As shown in Figure 4-4, manually adjust the required brightness on the brightness adjustment bar, and click the "apply" button to save the adjusted effect to the receiving card.

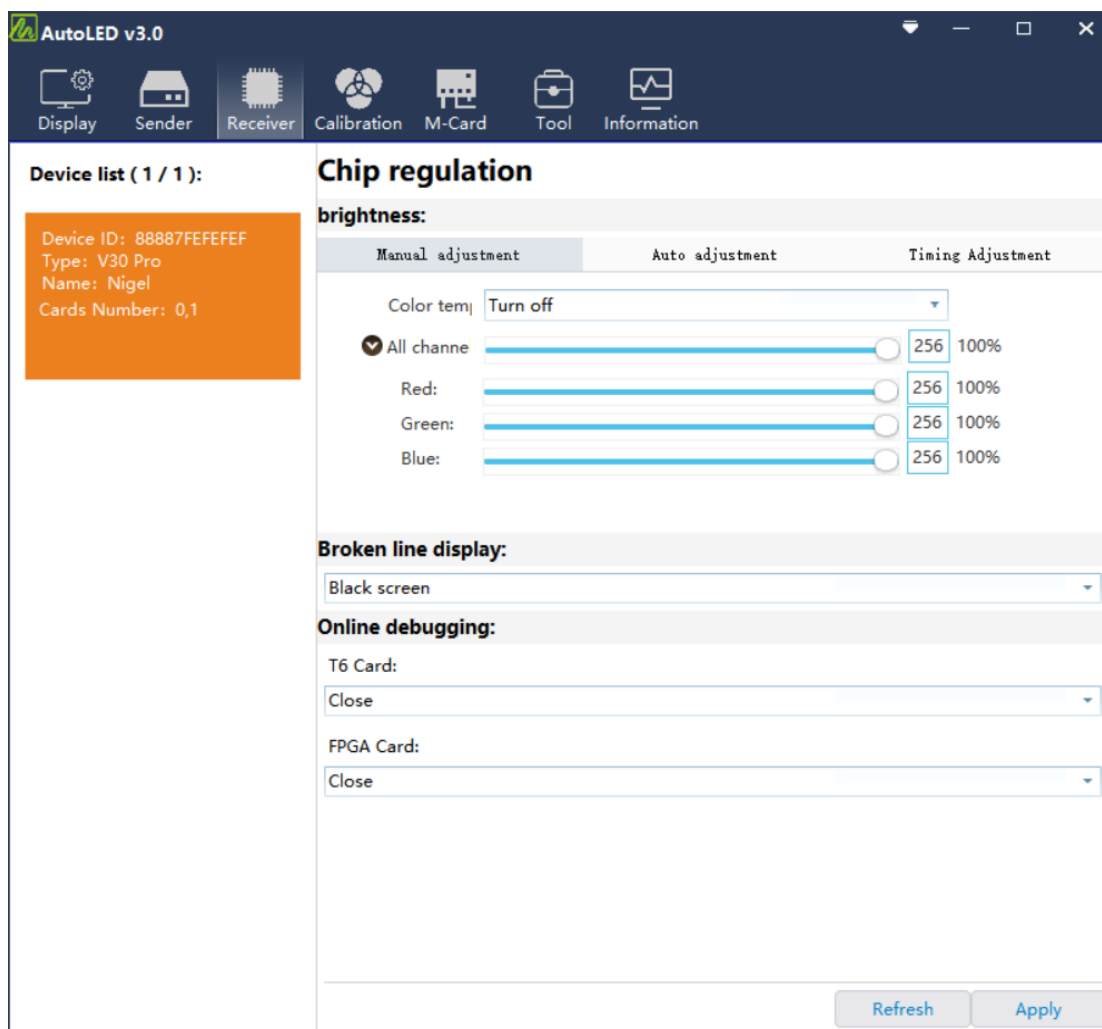


Figure 4-4 Brightness Adjustment of the receiving card

4.5 Broken Line Display

The “Broken Line Display” means that when the sending card is disconnected from the receiving card, the led screen will display three modes: "black screen", "standby screen mode", and "last frame". The standby picture is the “factory default red, green, blue, and black”, this colorful lines, and the user can also define the picture by himself. After debugging, click the "Apply" button to save the adjusted effect to the

receiving card.

4.6 . Network Cable Backup and DVI Backup

Network Cable Backup : The receiving card can be loop connected through the network cable cascading method. The network cables at both ends of the loop are respectively connected to the primary/secondary network ports of the sending card. When a certain network cable in the loop is accidentally disconnected, the sending card will take over the receiving card that disconnected from the network and ensure that the large screen still displays normally.

Single Sending Card Backup : When a single sending card (for example:ST80 sending card) only uses one network port to load and configure the screen, the other network port will automatically be the back up. If the large screen has more than 650 thousand pixels, please use dual sending cards for backup. After the large screen is debugged, connect the loop network cable directly to the other network port of the sending card so as to complete the single sending card backup , as shown in Figure 4-6-1.

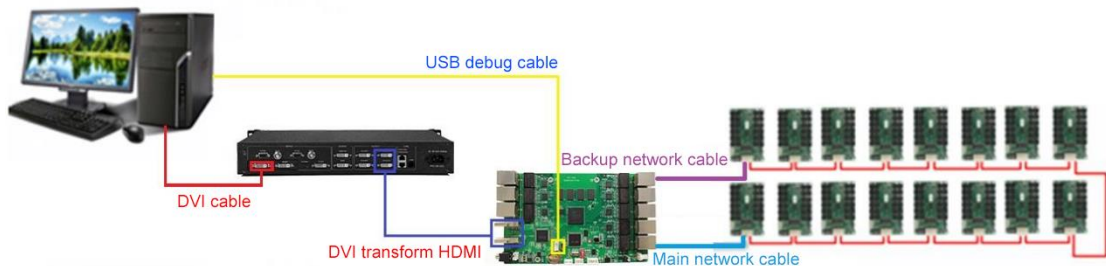


Figure 4-6-1 Single Sending Card Backup

Dual sending card backup at the same port: When a single sending

card (e.g.ST80 sending card) uses two network ports to load and configure the screen at the same time, connect the two loop network cables to the corresponding network ports of the backup sending card, As shown in Figure 4-6-2. Disconnect the backup network port of the backup sending card first,after the main sending card is debugged, directly send the saved screen connection file to the backup sending card and solidify it, and then connect the backup (loop) network cable to achieve the dual sending card backup at the same port.

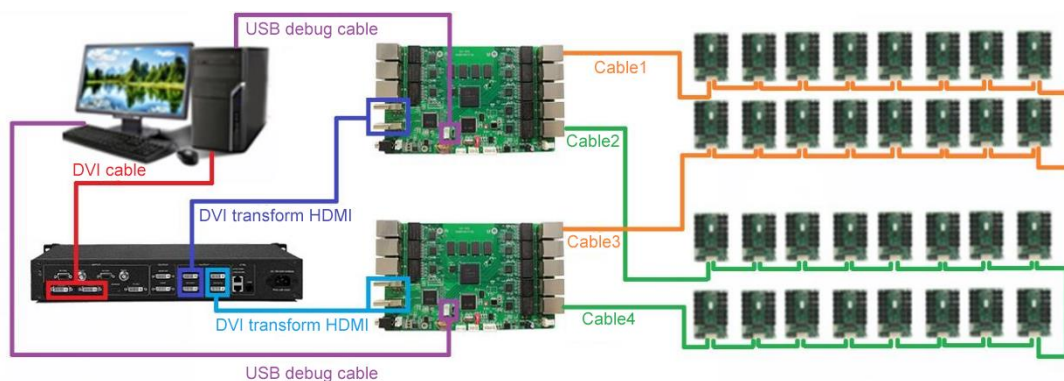


Figure 4-6-2 Dual Sending Card Backup At the Same Port

DVI Dual Backup: The DVI backup can only be done when the dual sending card backup is made. Refer to the dual sending card backup setting to complete the dual card network cable backup, and input DVI video signals to the two sending cards respectively to realize the DVI dual backup function, as shown in Figure 4-6-3.

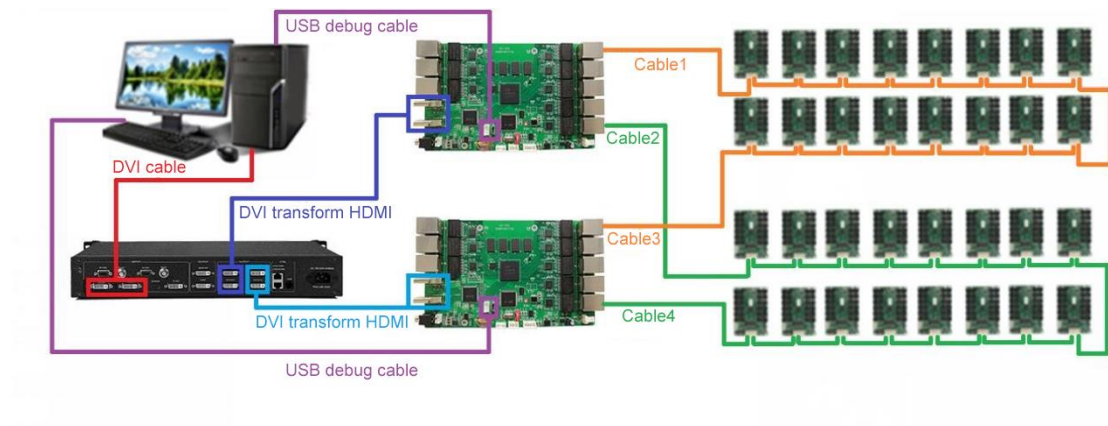


Figure 4-6-3 DVI Backup Diagram

When “Video Processor 1” disconnects the DVI signal input to “Sending Card 1”, the system will automatically switch to the DVI signal of “Sending Card 2” and the DVI signal of “Video Processor 2” so as to form a DVI signal dual backup.

4.7 Gamma Setting

4.7.1 Loading the calibration file

All LED screens have the problem of unsatisfactory uniformity to a certain extent when they were produced out. After the LED display is used for a period of time, due to the difference of individual LED light attenuation and other external factors, the uniformity will be further deteriorated. But the brightness of the entire screen can be displayed uniformly through calibration. The loading of calibration data is introduced here to realize the calibration effect.

(1) **Calibration Type**-If the display needs to be calibrated, you need to select the corresponding calibration type on the receiver interface, then send and solidify the data, and then to get the screen connected. If you only need to realize the brightness calibration, select "brightness" in the

calibration type options; select “color” for color calibration; select “color calibration” for simultaneous calibration of brightness and color, as shown in Figure 4-7-1.

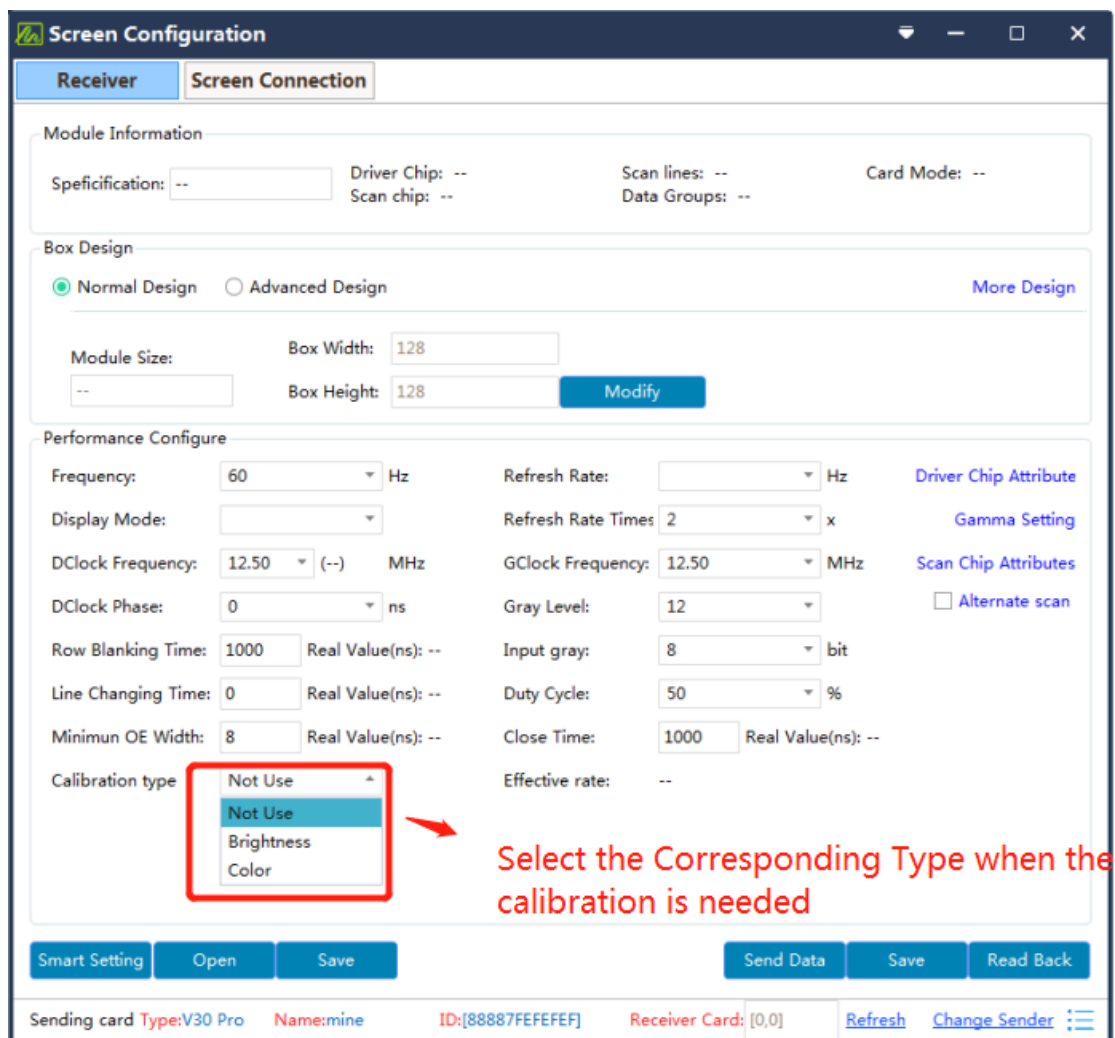


Figure 4-7-1 Calibration Type

(2) **More Design(Module Flash Calibration File Save).** If the module has a flash read-write calibration data design, the position layout settings of the flash chip needs to be set on the receiver interface “ More Design”. The setting entrance is shown in Figure 4-7-2:

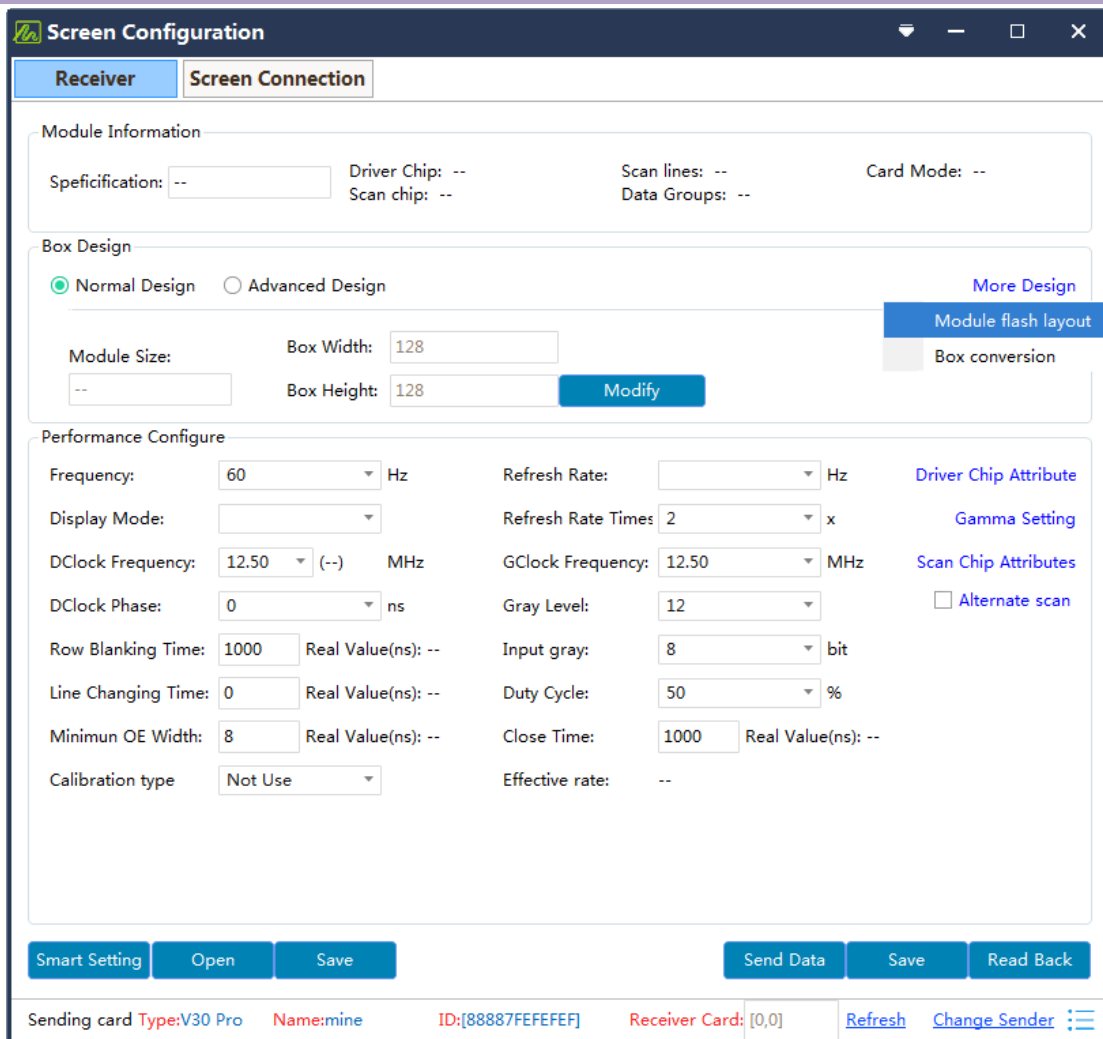


Figure 4-7-2 Module flash layout setting

After entering the module flash layout interface, according to the module size and relative position, set the flash horizontal ,vertical number (quantity), and the flash area pixels , as shown in Figure 4-7-3:

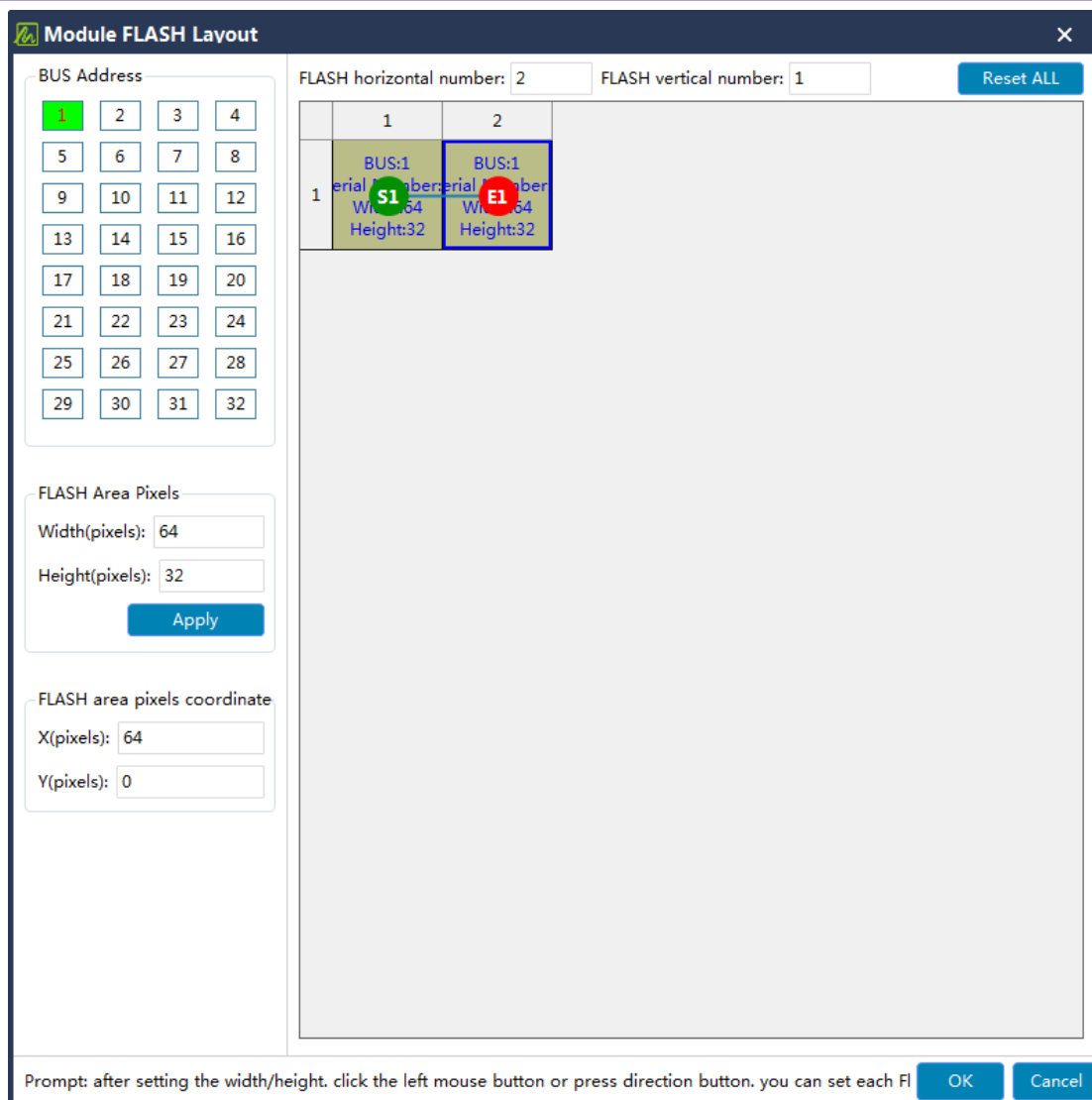


Figure 4-7-3 Module flash layout

(3) **Calibration Data Loading.** Calibration data (format.ccd): It is generated by manually editing the data through calibration software or by calculating the data that collected by professional calibration equipment for the brightness and chromaticity of the LED display. The loading steps are as follows:

- ① Click the “Browse...” button to load the calibration data into the software.
- ② After the calibration data is loaded, click “Send Data” to send the calibration data to the receiving card. (You can also select the specified

receiving card to send to, select the network port and the serial number of the receiving card to send the calibration data of a single box. If you don't know the location of the box, you can click "Open Box Sign" to check it out.)

③ After the calibration data is sent, enable the calibration function to verify the calibration data.

④ If verifying that the loaded calibration data is OK, click "Save Data" to solidify the calibration data to the receiving card, as shown in Figure 4-7-4:

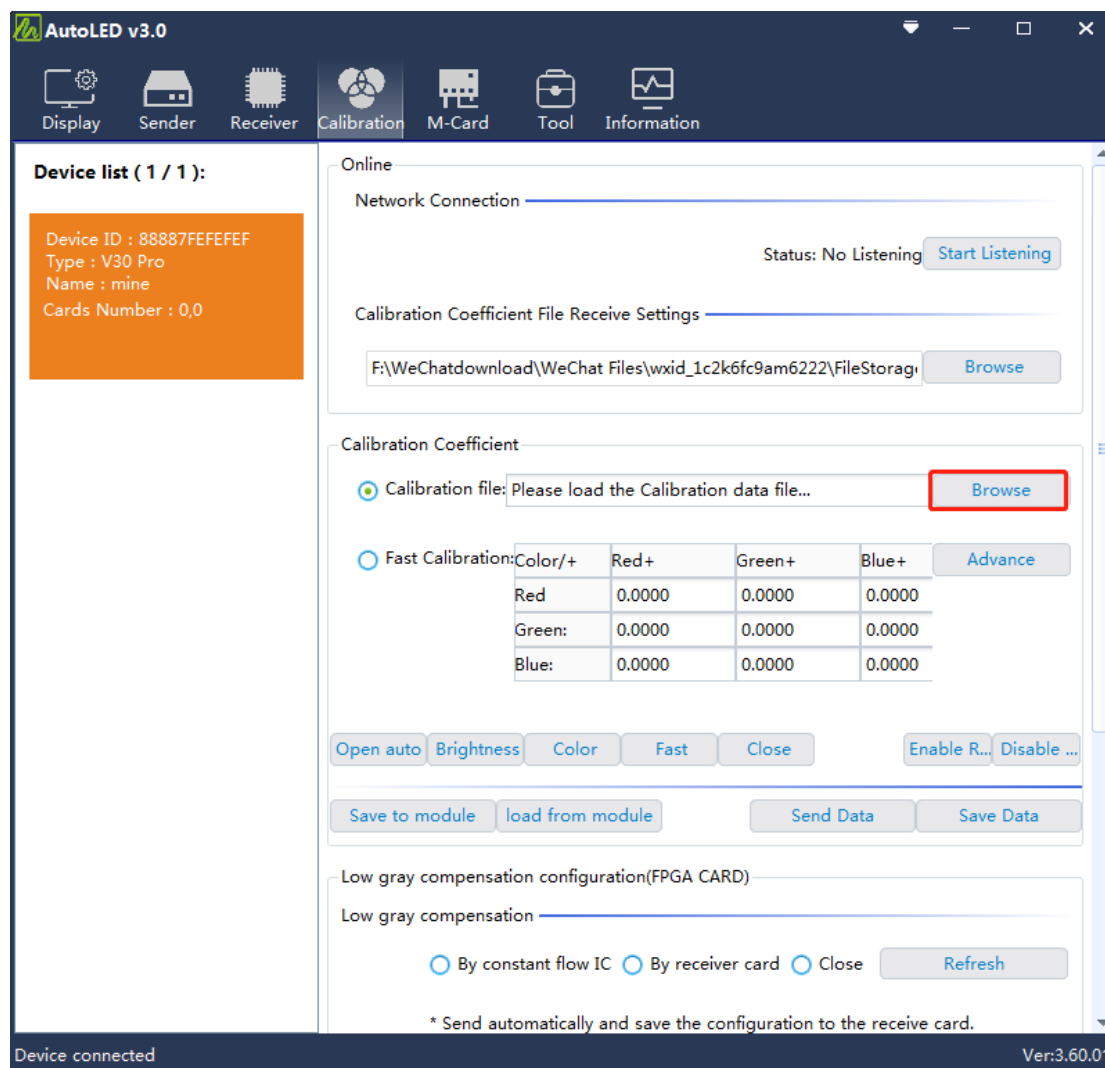


Figure 4-7-4 Calibration Data Loading

4.8 Image Control

(1) When the device is connected to the MVB series products or similar products, the interface of the sending card changes, you can modify the resolution, position and the splicing method, as shown in Figure 4-8-1

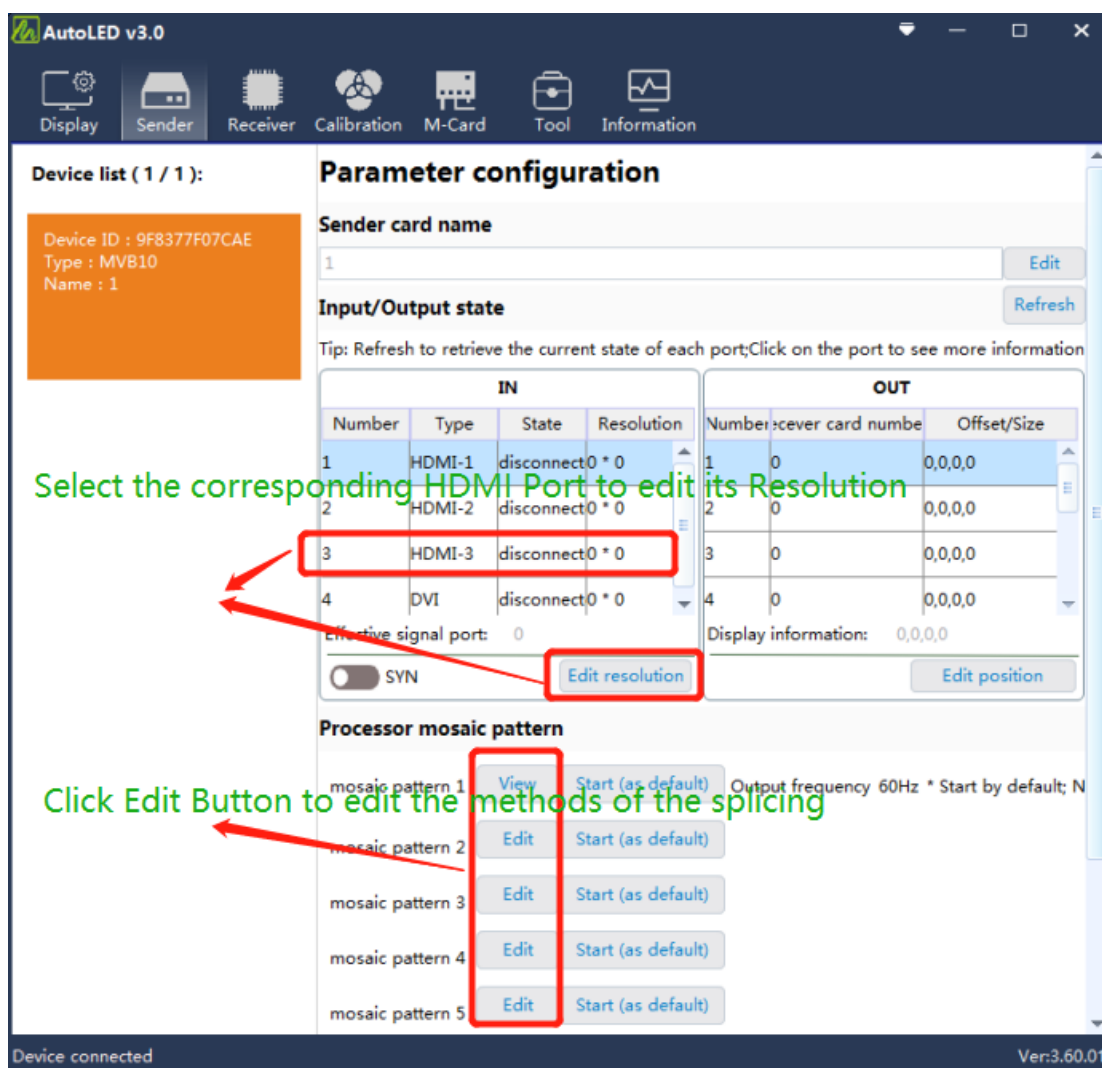


Figure 4-8-1 Image Control Operation

(2) Click the “edit” button to enter the scene configuration page, select the corresponding HDMI interface to modify the screen resolution

and window position ,as shown in Figure 4-8-2

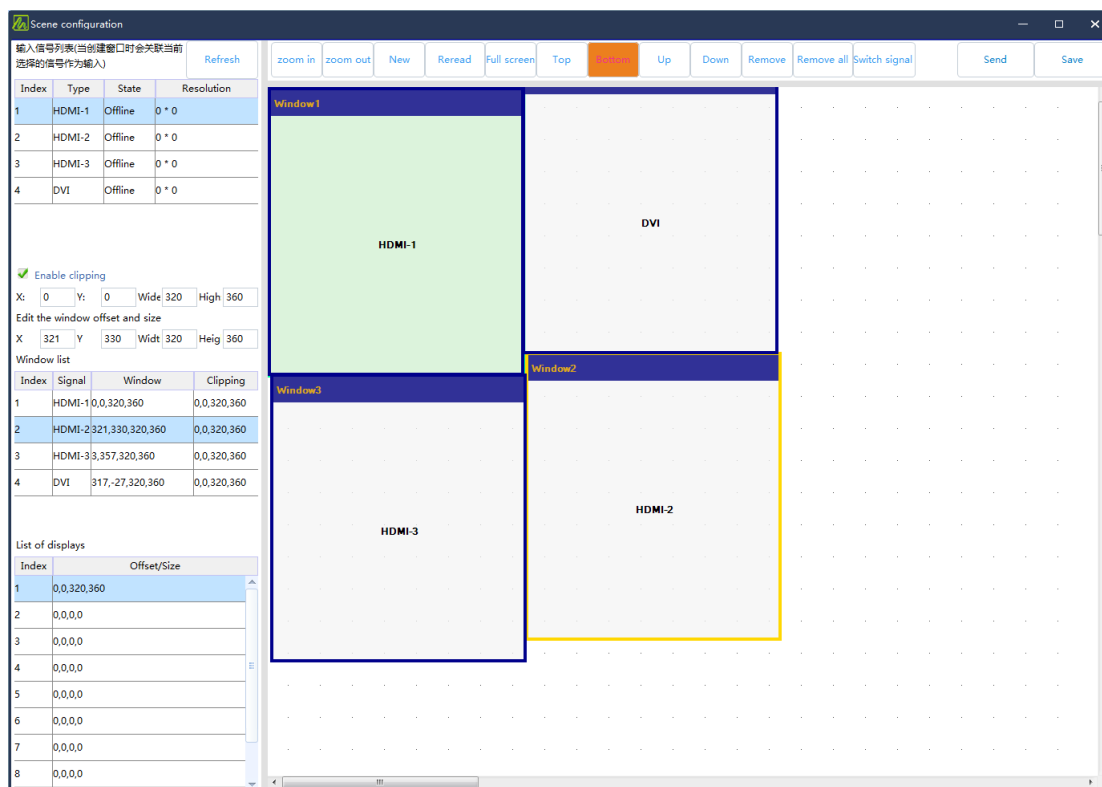


Figure 4-8-2 Scene Configuration

Chapter 5 Tool (Test Tool)

Test tool: It is mainly to test the display effect and the aging test of the large screen. Click the “Tool” button on the main interface of the software and select “Test Tools” to enter the test tool interface, as shown in Figure 5. The test tool can detect whether the current display is a “pixel-to-pixel” display, as well as the display performance and effect of the led screen.

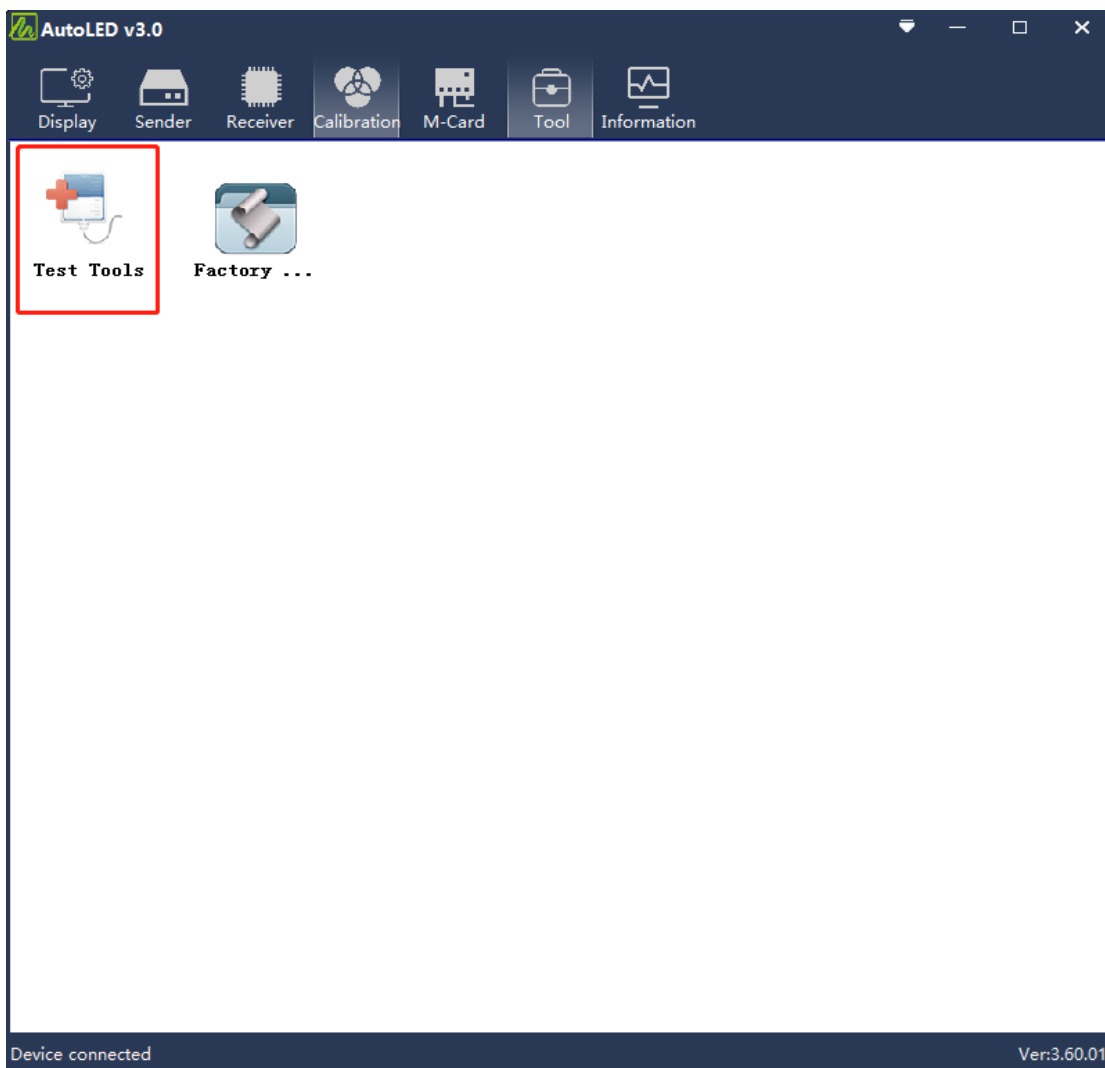


Figure 5 Test Tool

Chapter 6 Hardware Information Monitoring

Click the “Information” button on the main software interface to enter the hardware monitoring interface, as shown in Figure 6. In the device list on the left side of the window, you can click and switch to select the sending card, and the right side displays the firmware version of the receiving card that currently connected to the sending card, and error packets (network

cable error rate). When the network cable communication is poor, the corresponding receiving card will have an error packet (the first digit is greater than 4 and will continue to increase). You can check the communication of the first receiving card with the error packet on the same network port and the signal output of its previous card, you can click “Reset Wrong Package” to reset the error packet to zero after troubleshooting. When enabling the “start packet error detection”, if an abnormal network cable communication appears in the display, the system will automatically turn the cabinet that receives the abnormal signal into the self-test state (red, green, blue, scan, etc.will be alternately displayed) until the maintenance is done and the communication is normal. And when the debugging is well finished, uncheck the “start packet error detection”.

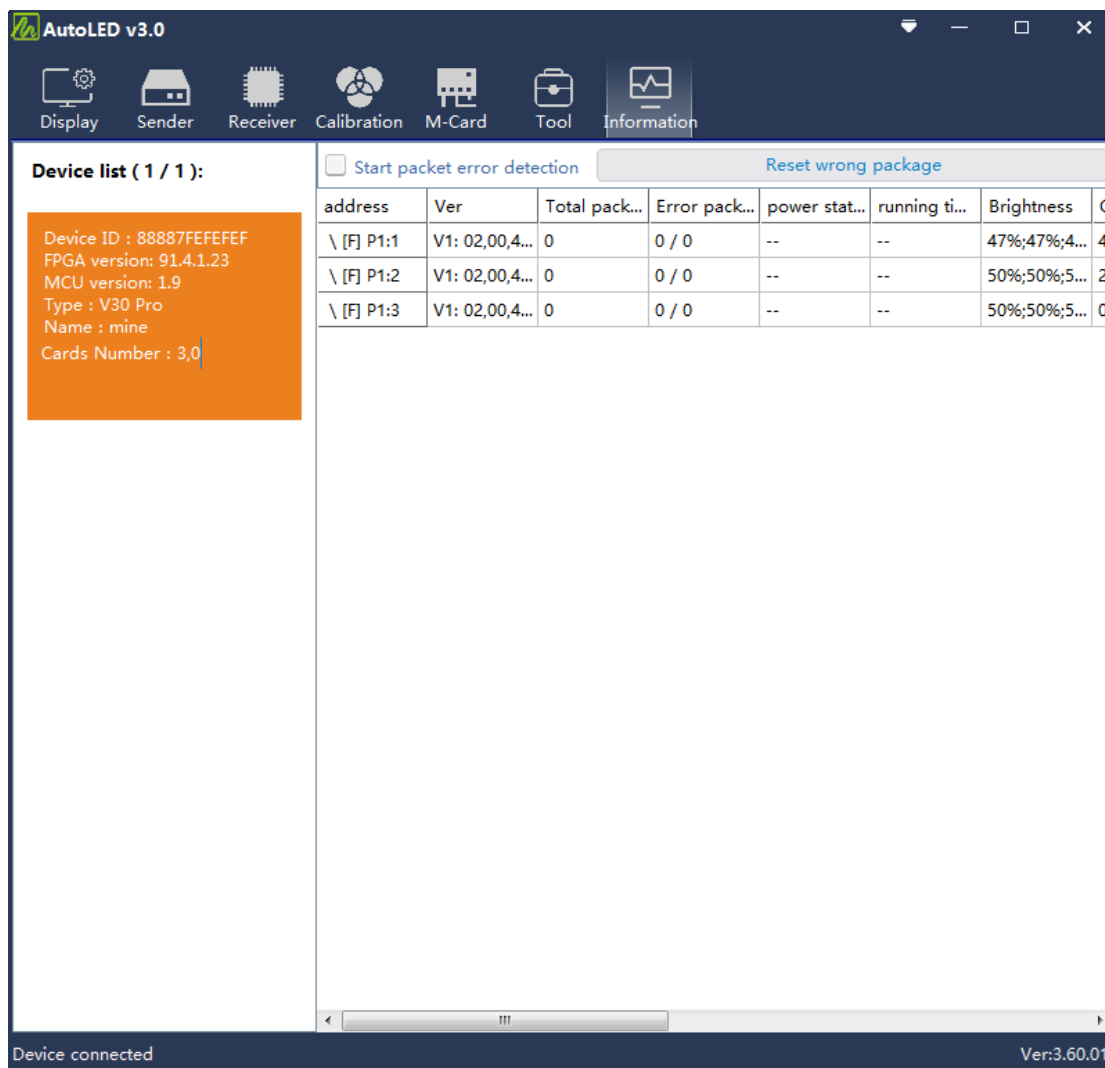


Figure 6 Hardware Information

Chapter 7 Multifunctional Card Instructions

7.1 Multifunctional Card Interface Introduction and Operation

Instructions

Setting Interface : Click **M-Card** , By default, it gets to the multifunctional card setting interface, the initial interface, after connecting the multifunctional card, click **Add --> Auto add**, and add a sending card

as shown in Figure 7-1-1.

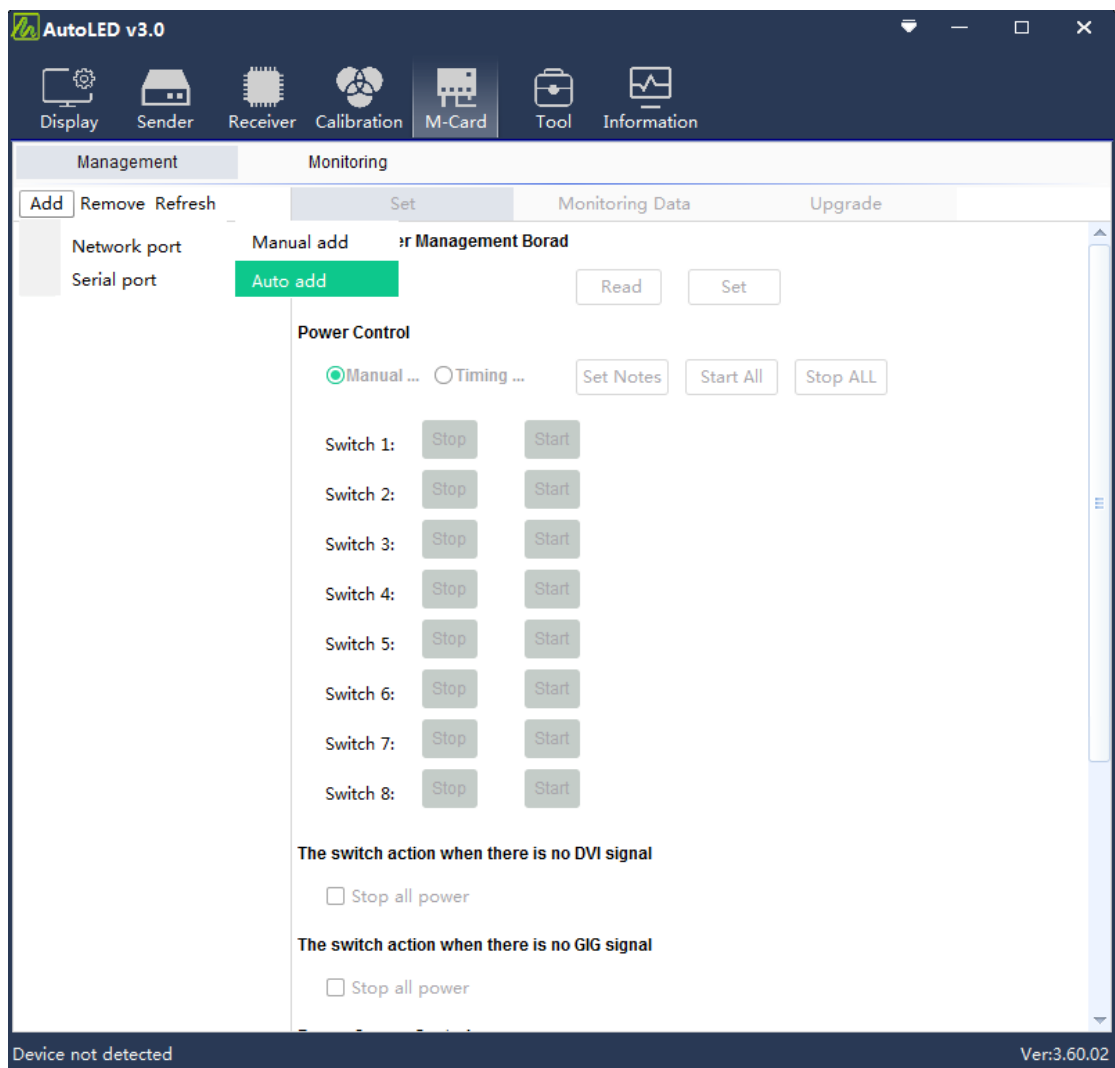


Figure 7-1-1 Multifunctional Card Initialized Interface

Status Interface : It displays status information, the display data will not be updated automatically, you need to click the “refresh” (the onboard monitoring data bar “refresh”) button to update the real-time data. The environment brightness here should be the same as the environment brightness adjusted by the receiving card. As shown in Figure 7-1-2.

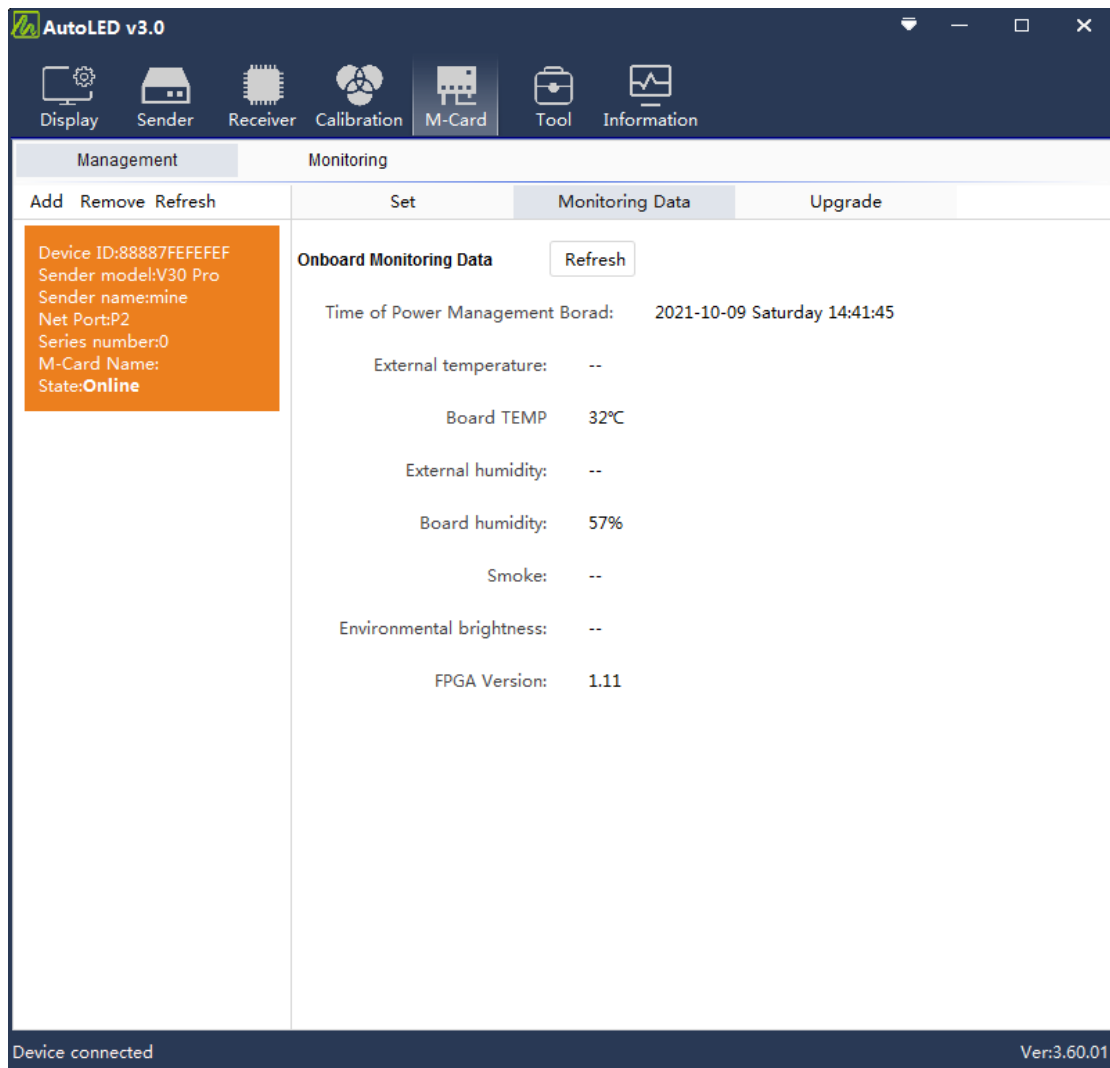


Figure 7-1-2 Multifunctional Onboard Data Monitoring VS the brightness adjusted by the receiving card

Upgrading Interface: It is used to upgrade new functions and fix some software problems of the software. The upgrading interface is shown in Figure 7-1-3.

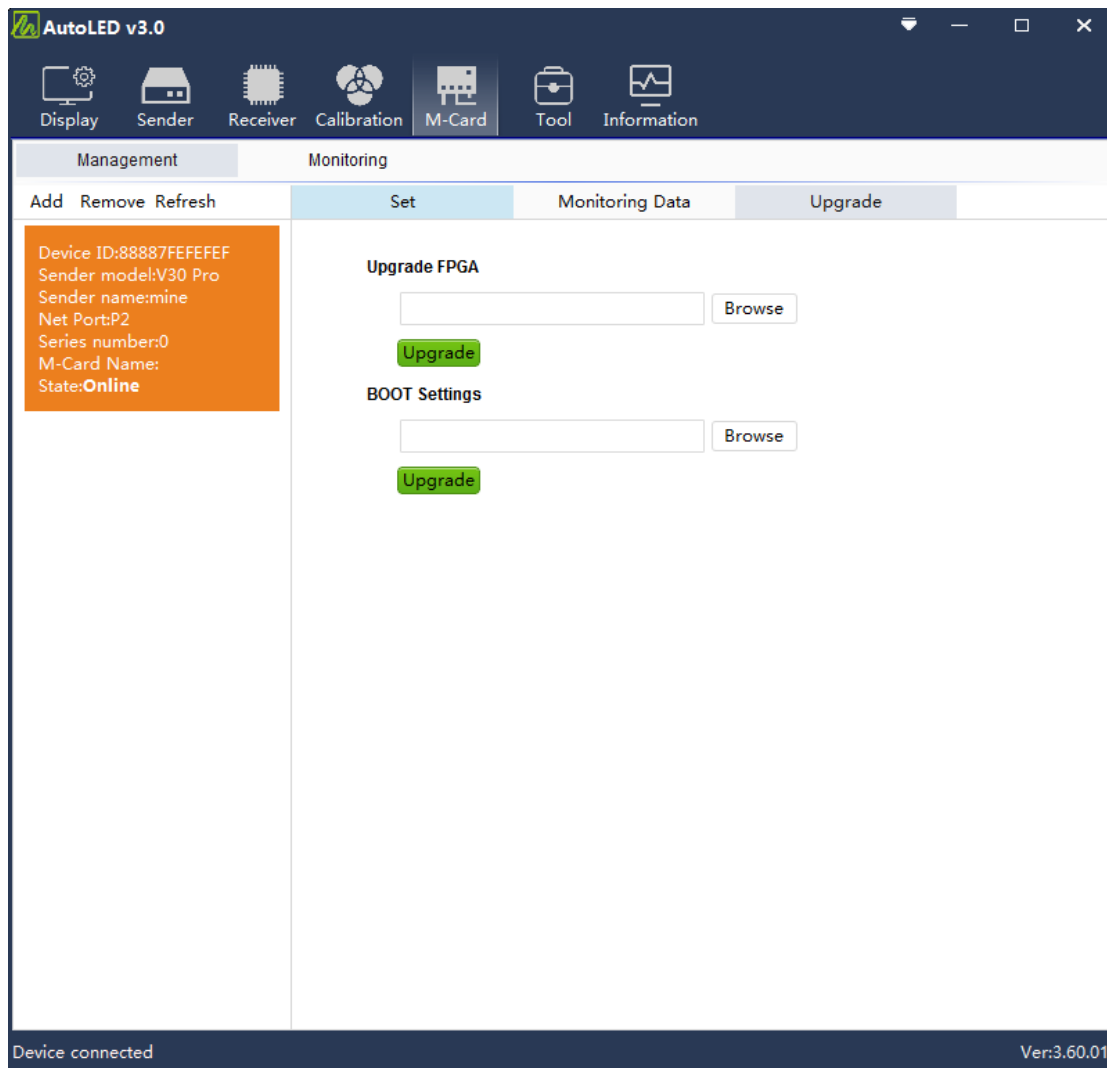


Figure 7-1-3 Multifunctional Card Upgrading Interface

7.2 Introduction to the specific functions of the multifunctional card

7.2.1 Add Multifunctional Card

(1) The multifunctional card has been added, as shown in Figure 7-2-1

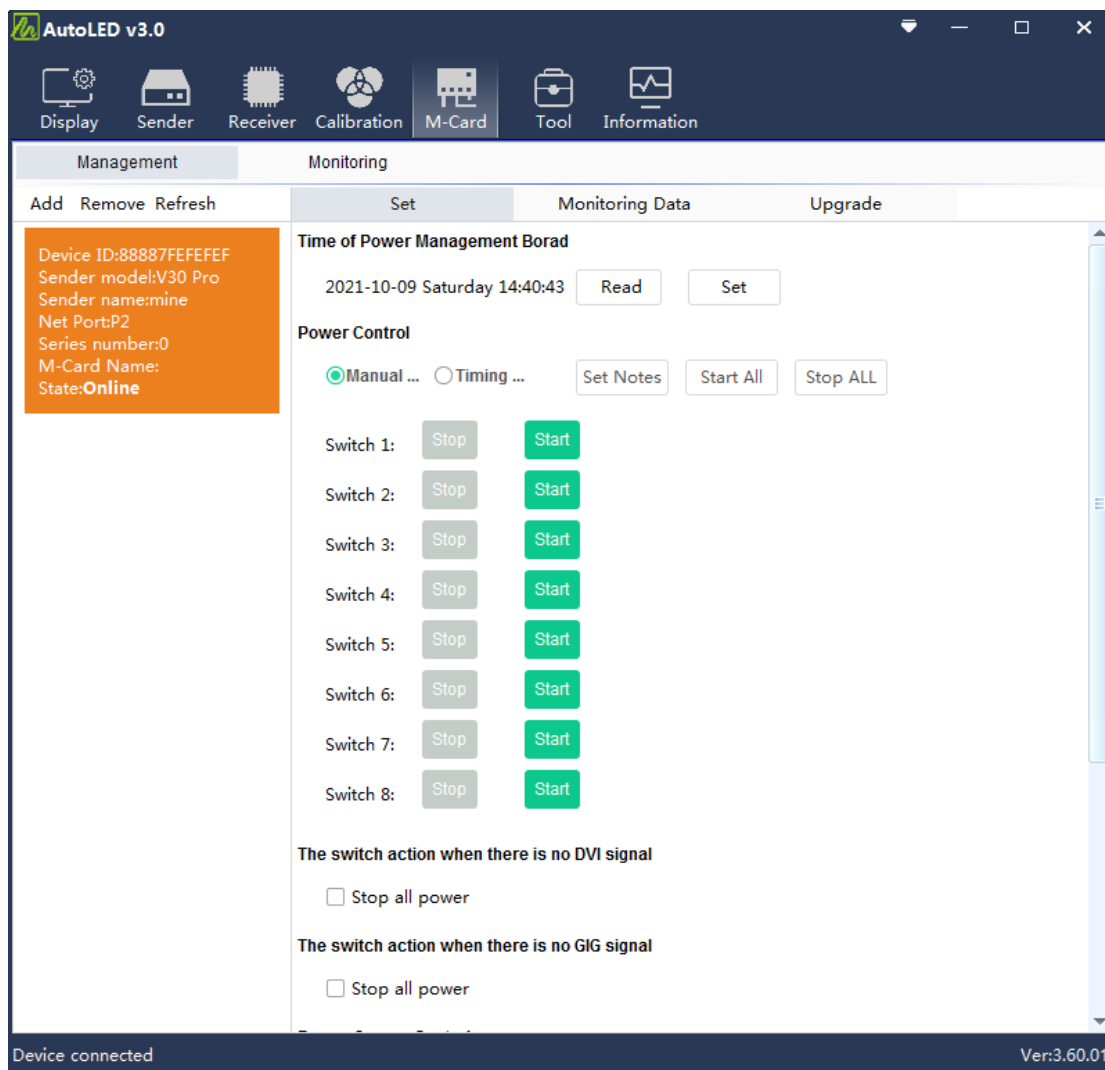


Figure 7-2-1 Add Multifunctional Card

(2) The information of added multifunctional card is displayed as follows: orange is the selected color, and blue is the unselected color, as shown in Figure 7-2-2.

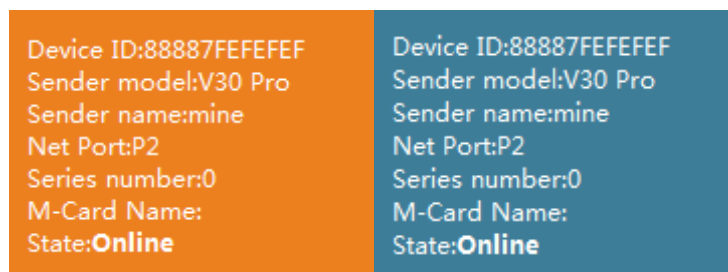


Figure 7-2-2 Multifunctional Card Information

(3) The Power Supply on the right controls the color changes of the power switch and it can be operated.

7.2.2 Time Setting of the Power Management Board

Set the multifunctional card time to synchronize with the computer time: set-read. The setting is to synchronize the computer time, and the reading is to refresh in real time, as shown in Figure 7-2-3.

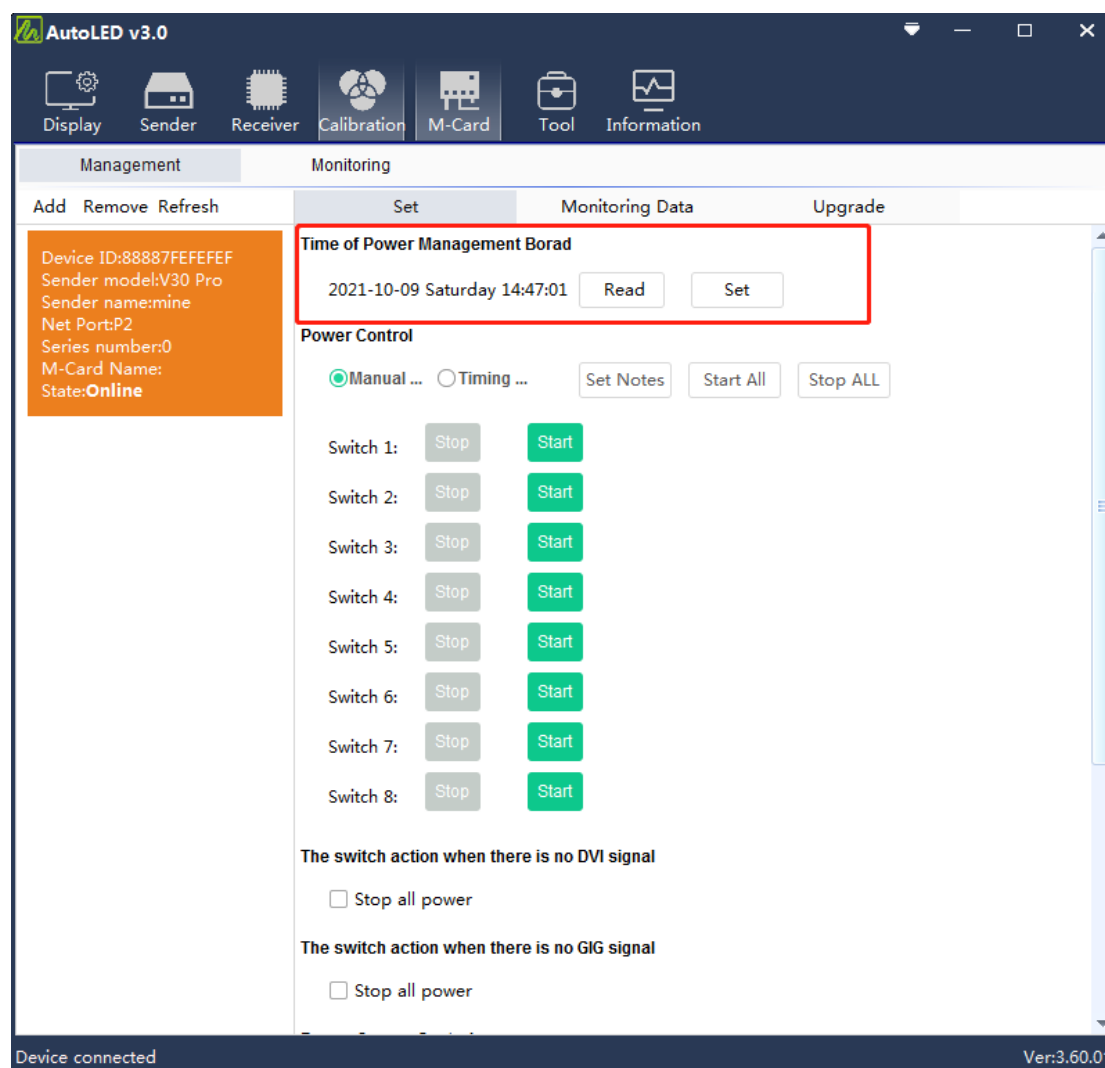


Figure 7-2-3 Multifunctional Card Time Setting

7.2.3 Power Control

The default is manual control, you can use the mouse to click the switch to control the corresponding circuit switch of the multifunctional card, and the multifunctional card circuit will switch the corresponding circuit and emit a prompt sound. (There will be a 2 second delay for the startup beep).

Remarks can also be used to remark the corresponding switch information, as shown in Figure 7-2-4.

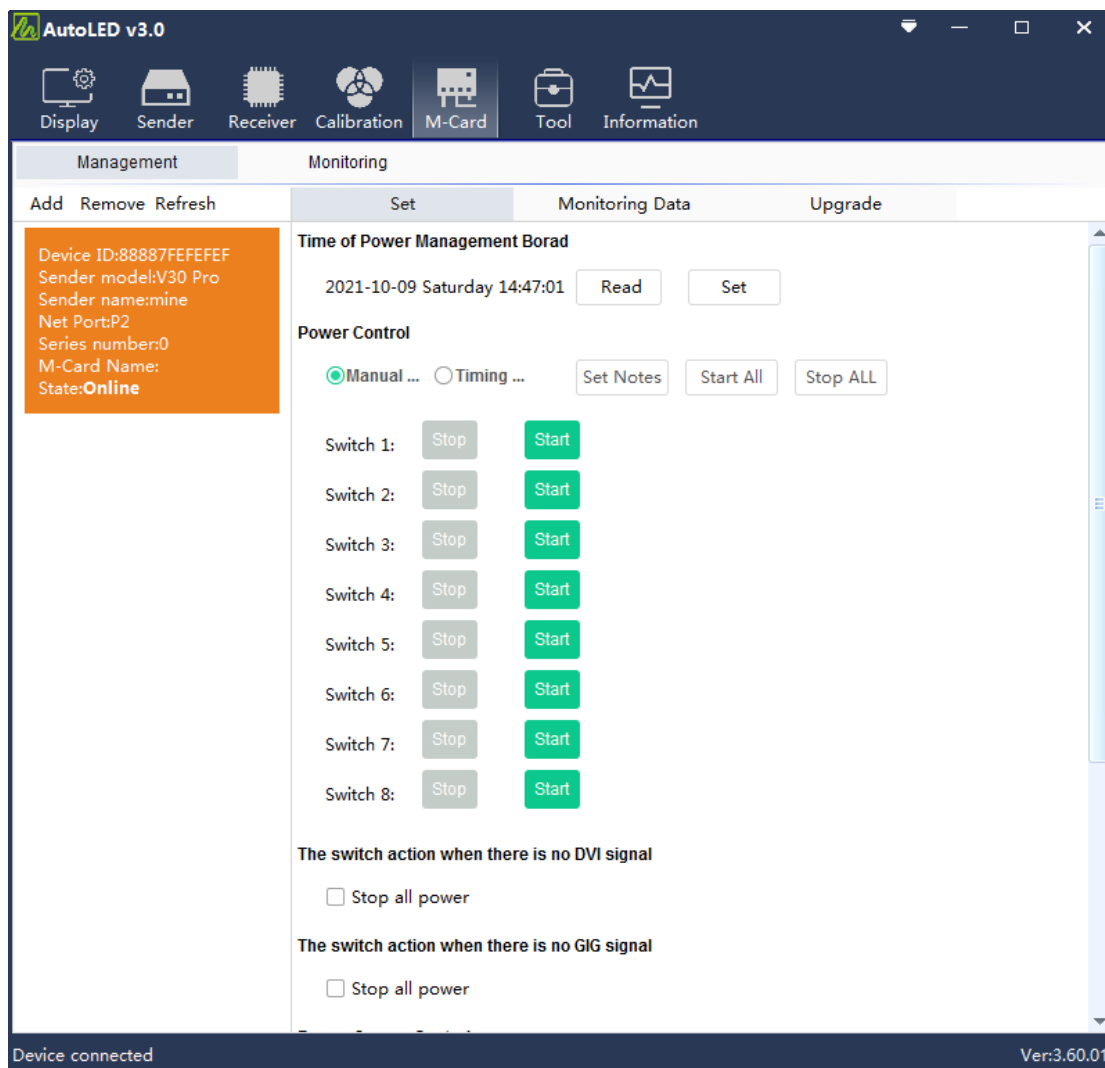


Figure 7-2-4 Manually Control the Power

The “Start All” button opens all switches in a stopped state. “Stop All” will stop all switches that are in the starting state. The switch can also be set to automatic control, as shown in Figure 7-2-5.

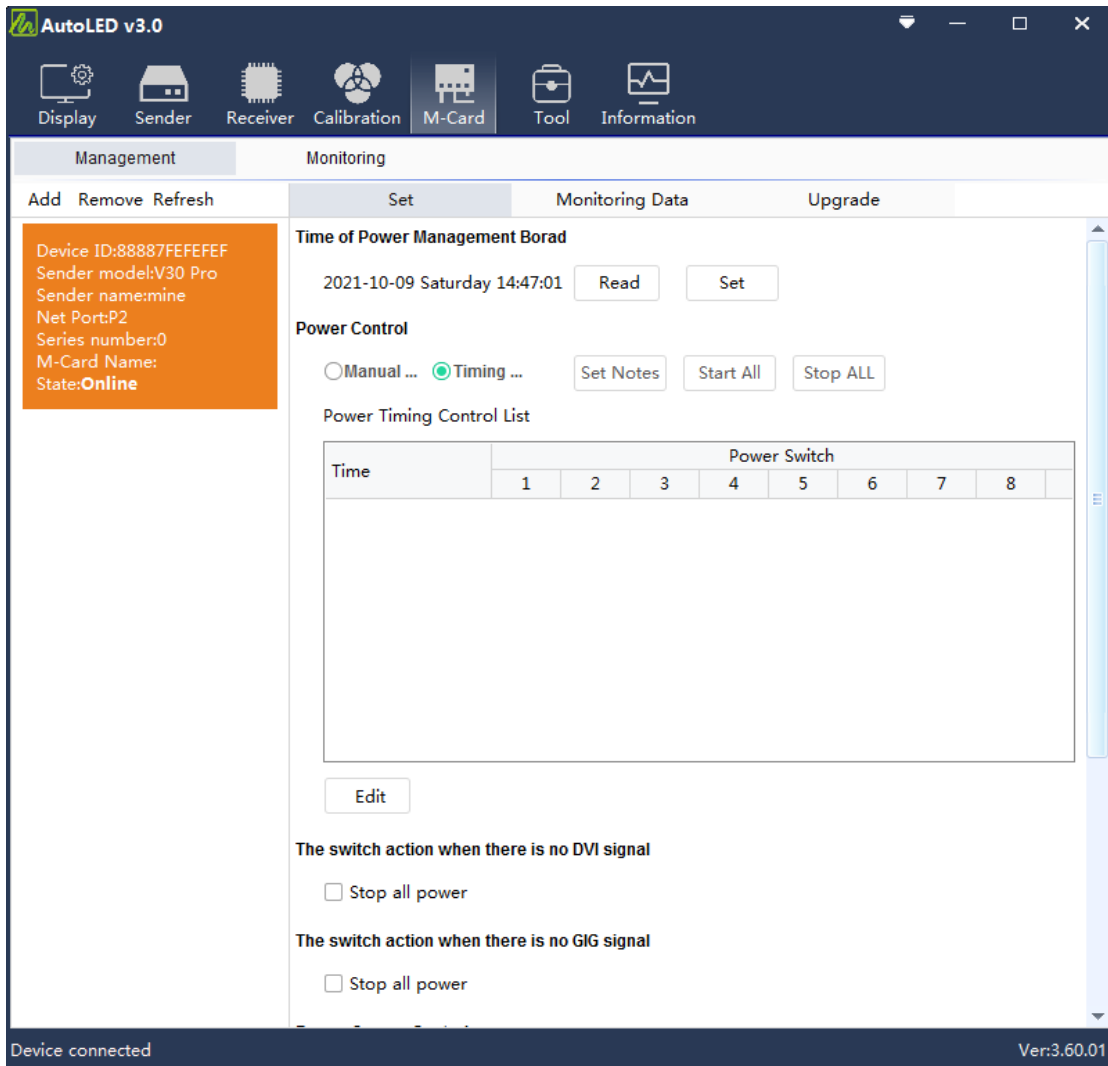


Figure 7-2-5 Automatic Power Control

Click Edit to enter the “Power Timing Control” interface, as shown in Figure 7-2-6.

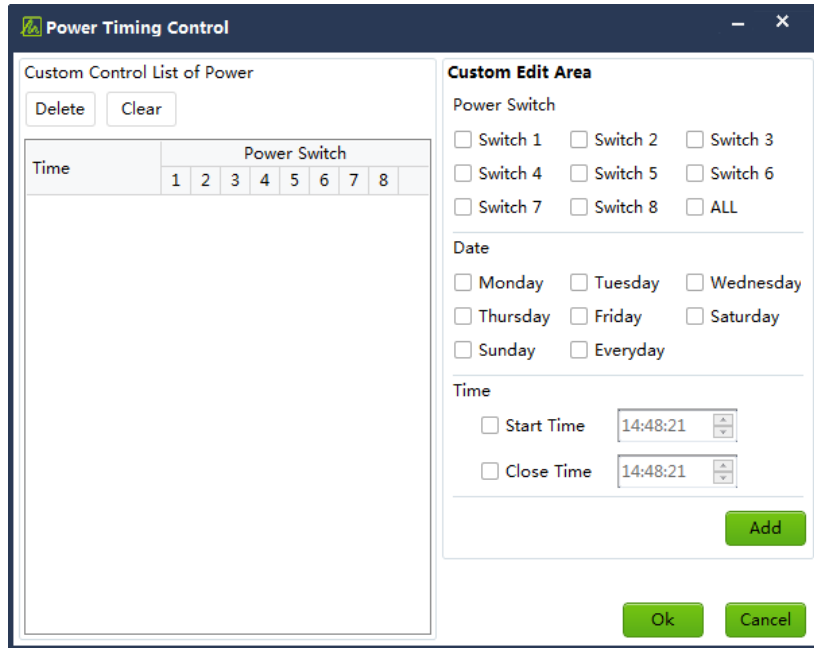


Figure 7-2-6 Power Timing Control Editing Interface

According to the custom editing area, control different circuits to execute the start and stop commands at different dates and times. After the selection is complete, click the “Add” button to add the command to the power custom control list and click the “OK” button to return to the main interface. The multifunctional card will execute the operation corresponding to the time, and the command will be executed even when the software is closed. The operation is shown in Figure 7-2-7.

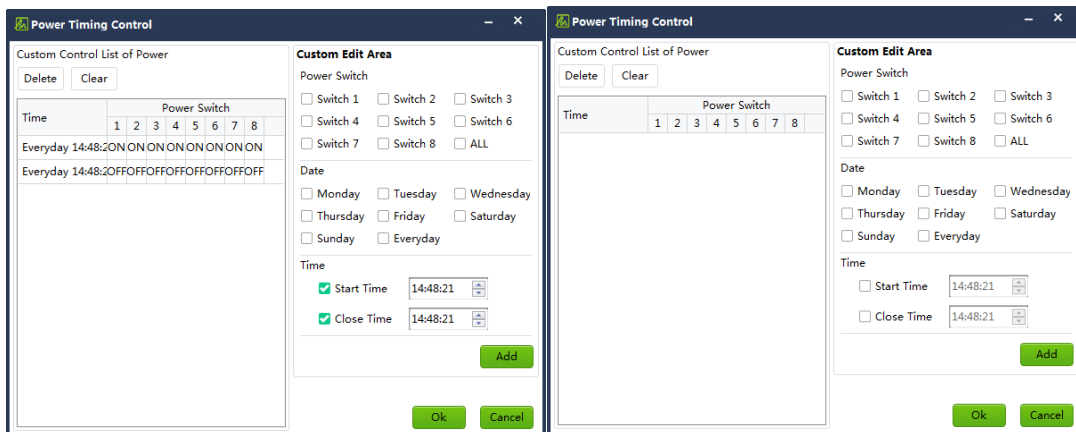


Figure 7-2-7 Add Timing Control Commands

Chapter 8 FAQs

8.1 FAQs about the Control Software and Its Solutions

Q1: Can't find the sending card?

(1) After the hardware is connected, the software cannot read the sending card, you can perform the following operations:

- ① Re-plug the USB cable.*
- ② Check the USB cable and the computer USB interface.*
- ③ Reinstall the debugging software (including USB driver).*
- ④ Restart or replace the sending card.*

(2) Check whether the sending card driver is installed properly: Open the computer device manager and check whether there is an LED Smart Card device in the universal serial bus controller, as shown in Figure 8.8.

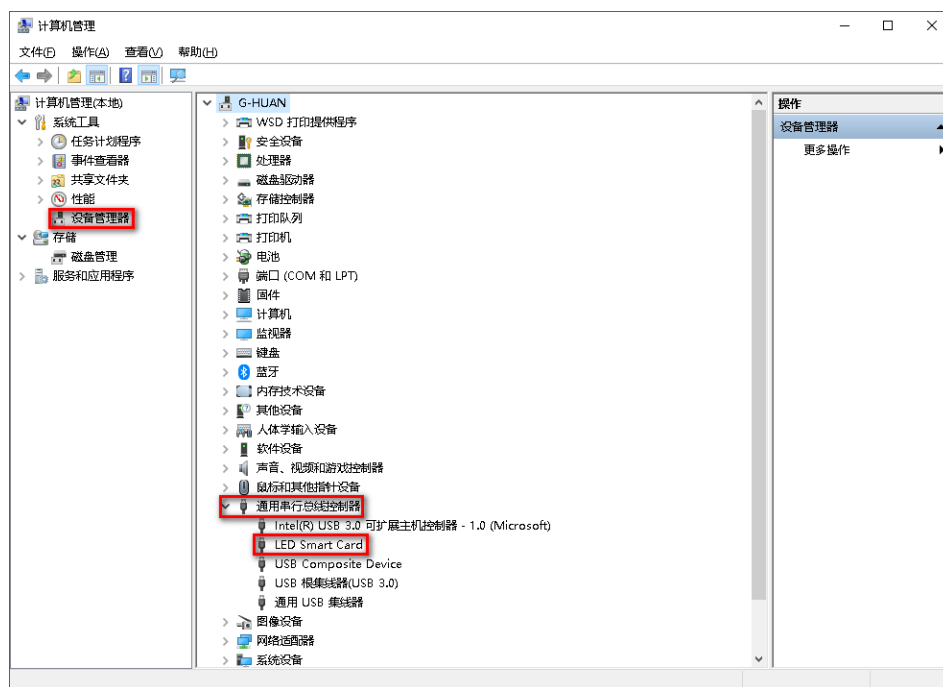


Figure 8 LED Smart Card Driver

Q2: The LED Screen is fuzzy/unclear?

(1) To check and confirm the resolution of the video source (such as computer resolution, etc.), and then enter the “sender” interface to set the "resolution ratio" of the sending card to make it consistent with the video source (resolution can be customized)

(2) To change the video source to be played.

(3) To check whether the cabinet parameters(configurations) of the large-screen are properly made.

Q3: Can't find the receiving card?

(1) To confirm and make sure that the receiving card indicator is normal (the red light is always on, the green light is flashing), if the red light is off, please check the power supply of the receiving card; if the green light is off, please check the communication between the receiving card and the sending card, that is, the network cable.

(2) To confirm whether the sending card and the receiving card are compatible, and the firmware programs are all T6 or FFPGA programs.

(3) To refresh the receiving card or switch the sending card in the receiver interface on the AutoLED software (simultaneous debugging of multiple sending cards).

8.2 FAQs about Multifunctional Card and Its Solutions

Q1: The data return delay description of the sensor.

The data return takes a certain amount of time. If it is the first time to connect to the device, it will take about 1-2 minutes. Generally, this happens when:

(1) It's the first time to read the brightness value from the light sensor(Receiver-Chip Regulation-Auto Adjustment)

(2) The "Auto Adjustment" adjusts the brightness data and transmit to the LED Screen, it takes time to get the changes, that makes the delay as well.

(3) The temperature change itself is not a rapid change.

Q2: Auto Adjustment of the brightness has no brightness values of the environment and the current led screen.

(1) To check whether the hardware connection is unstable or the interface is off.

(2) In the lower left corner of the software, to check whether the device is connected and whether the multifunctional card status is normal.

(3) If the hardware connection is normal but the problem still exists,

please contact the manufacturer directly(Nigel: Whats App:+86 18673763873)..

Q3: The automatic control command is not executed in the power control

(1) To check whether the time of the power management board is synchronized with the computer. Because when performing automatic control, the command is executed according to the time. If the time is not synchronized with the computer, the data cannot be processed and the command cannot be executed.

(2) To check whether the command execution time is reasonable. The opening time needs to be greater than the computer time and less than the end time.

(3) To check whether the command is sent successfully, and whether there is command content in the custom power control list.

(4) To check the current switch status and make sure whether it's corresponding to the status of the automatic control and execution.

(5) If the problem still exists after attempts, please contact the manufacturer directly.

Note: Manual brightness adjustment and automatic brightness

adjustment instructions.

When the automatic brightness adjustment state is enabled, to adjust the manual adjustment brightness, even when the value is 256 (100% brightness), the brightness of the display is still 80% of the display brightness. The display brightness is the same as the maximum value (80%) in the automatic brightness adjustment. Because when the automatic brightness adjustment is not canceled, the display brightness performed by the receiving card is still subject to the value of the automatic brightness adjustment. The manually adjusted value is sent to the sending card, but the value is not fully executed by the receiving card (only 80% is executed). When the receiving card executes the manual value and automatic adjustment value of the sending card, the value in the automatic brightness adjustment is given priority.



Scan code attention

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web address : www.mooncell.com.cn