Chapter I Model701, Model702 Functions and Features

1. Giga Technology

Veritable Giga technology. One sending card can support the max pixels: Model701: 1280*1024; model702: 2048*640; two cards are cascaded: 2048*1152. Single network cable supports the max pixels: model701: 1024*640, 1280*512; model702: 1600*400, 2048*320

2. Pixel by Pixel Correction and Unit box by Unit box Correction Function

Pixel by pixel correction supports four kinds of correction modes: single pixel, 2*2pixels, 4*4 pixels, 8*8 pixels; and the max correction is 6144 pixels/module, and brightness 256 levels for red, green, blue. Every unit box correction is used to adjust the chromatism among every unit box; and brightness 256 levels for red, green, blue.

3. Intelligent Identification Function

The intelligent identification program can recognize every kind of scanning mode and every type of signal trend of all kinds of double-color, full-color (real pixel and virtual pixel) drive boards, and the accuracy rate is 99%.

4. Gray level 0---Gray Level 66536 (64K) are Optional

Users can adjust the gray level from 0 to 66536 levels according to requirement of displays, making the display achieve the most desirable effects.

5. Optional Refresh Frequency, Synchronous function

Refresh frequency are adjustable from 10HZ to 3000HZ, and the refresh frequency and phase-lock function can make the display refresh locked at integral multiple of that of computer display, avoiding the image to been torn, and ensuring the image to be perfect. The phase-lock synchronous range is from 47HZ to 76HZ.

6. Super loading capacity

Full-color receiving card with gray level 4096 (Model 4K) and refresh frequency 180HZ can support 512*128; full-color receiving card (model 16K, only for static) with gray level 16384 and refresh frequency 300HZ can control 160*64,.(Remarks: the drive board must realize high frequency 30MHZ)

7. Double network cables switch automatically

The A and B ports of the receiving card can be both used as input ports or output ports. Users can adapt two computers to control a display at the same time, when one is out of order, the other will replace it automatically; Users can also use one computer with double network cables to control a display, when one is out of order, the other will take place of it automatically, making the display work normally all time.

8. Multi-display synchronous and combination functions.

Supporting one sending card to control multi-display, and the multi-display can be willful combination, synchronous display, and independent play, etc. through shortcut key.

9. Brightness 256 Levels Automatic Regulation

The function of brightness 256 levels automatic regulation can make the display brightness regulation more efficient.

10. Voice Transmission Function

Model 702 integrates the voice transmission, and requires no audio cable to transmit audio signals to the display. Double 24bits and 64KHZ hi-fi digital analogy and modulus switch to transmit the voice, making display achieve the perfect video effect.

11. Upgrading Program Online

If program of receiving card needs to be upgraded, just open the display power, and upgrade it through Led Studio, no need to remove the receiving card from the display.

12. No Toggle Switch

No toggle switches on the receiving card, all the setups are set through Led Studio.

13. Test Function

Receiving card has the test function, no sending card needed; can test the display directly, such as bias, gray level, red, green, blue, etc. many kinds of test modes.

14. Super Long Transmission Distance

The max transmission distance is 170M (actual measure); normal transmission distance is 140M.

15. Matching software

Led Studio V8.0 or above.

Remarks:

Sending card includes: full-color TS701, full-color TS702, double-color DS 701, double-color DS702

The differences between full-color system and double system: double-color sending card can only be used for double-color display, but full-color sending card is suitable both for full-color (real pixel and virtual pixel) and double-color displays; however, double-color receiving card is the same as full-color one.

The differences between model 701 sending card and model 702 sending card:

Model701 can support 1280*1024pixels

Model702 can support 2048*1152

Single card model 702 can control 2048*640pixels

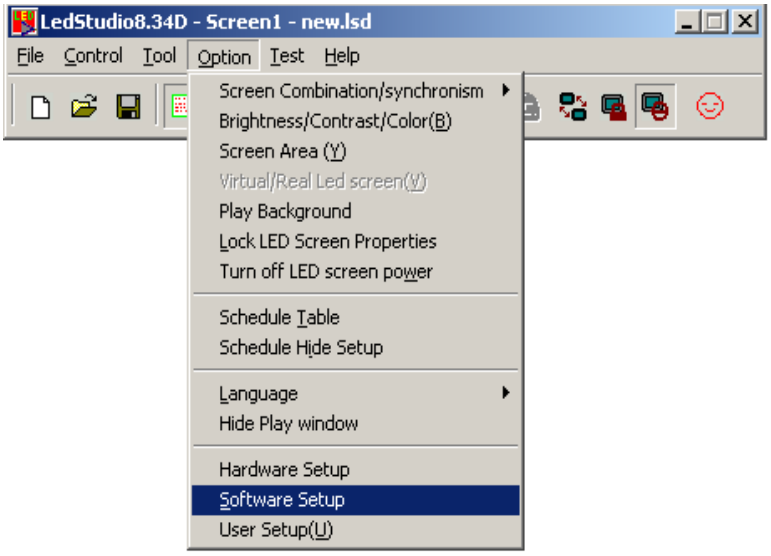
Model702 has been added the voice transmission and cascade functions

Chapter II Model 701and 702 Manual

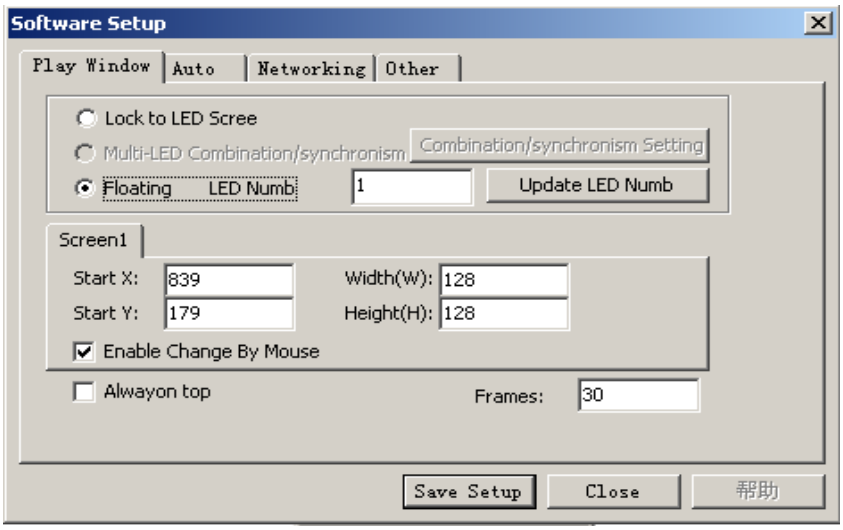
All the hardware setups are through the software—Led studio.

I. Enter setup dialog box

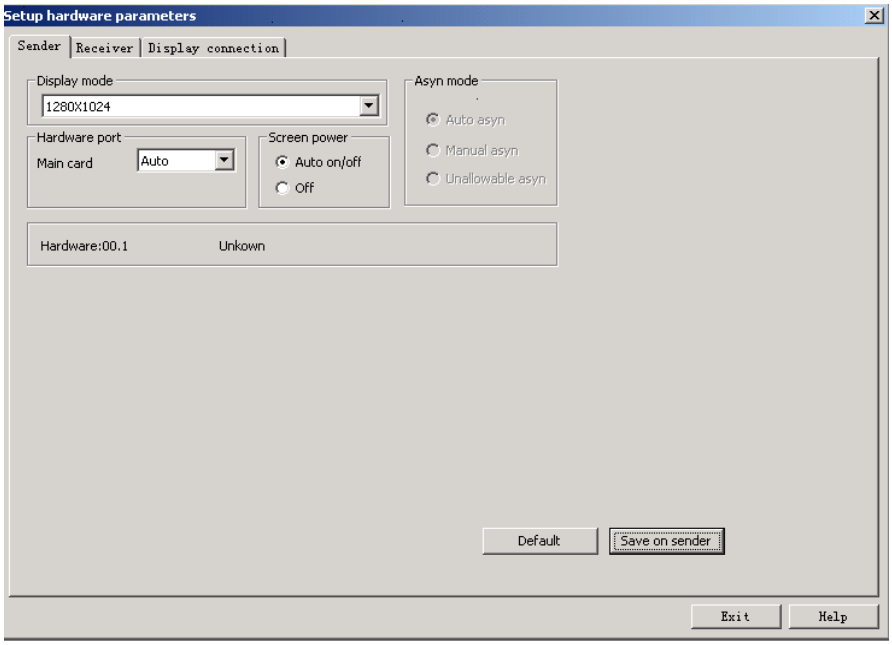
Click the “software setup”, as shown in below figure;



And then will appear a dialog box, as shown in below figure;



And then input “linsn”, the 5 small letters. (Computer screen shows nothing when inputting “linsn” by keypad.), then enter setup dialog box, as shown in below figure



II. Sending card setup

The setup for the sending card is very simple; if your display is work normally under the 1024*768 mode, nothing changes; otherwise choose the right mode according your display, then click “Save on sender”. (Remarks: the display mode refers to PC display mode.)

III. Receiving card setup

Users can choose one panel alone for testing, or choose one of panel of a whole display connected well for testing.

Before entering the setup dialog box, having a knowledge of all items on the operating interface is very important.

Present scan mode: after finishing intelligent setup, software interface will write out drive mode for present panel.

File: after finishing intelligent setup properly, users save drive setup, and name the drive file. For example: full-color 1/8 scan 8 rows/zone.

Led display refresh frequency: The refresh frequency is higher, image on the screen will more stable, and much clearer. If you want to use camera to shoot image on the display without ripple and flicker, you should setup the refresh frequency above 600HZ. Generally speaking, towards double-color screen, if you don’t pay attention to image effect on your display, setup refresh frequency as 60—75HZ; towards indoor display, you can setup 180—600HZ; towards outdoor display, setup 300-1200HZ.

Synchronous frequency: Selecting this item can make computer and led display synchronous, thereby display effect will more perfect.

Gray level: In general, gray level 256 is Ok for double-color display; gray level 4096 for indoor display; gray level 16384 for outdoor display. Of course, you can choose higher gray level for your display according to your requirement. The higher the gray level, the better the image.

Scan clock: It is up to design and performance of drive board. If drive board has a reasonable

design and good performance, it can reach high scan clock, so single receiving card can support more pixels.

Duty ratio: it refers to scan clock duty ratio, changing this data can make the scan clock reach higher data. Generally, setup the duty ratio as 50%.

Blanking time: It is used to clear dim brightness. Setup 3000 for double-color display; setup 200 for full color display. (real pixel and virtual pixel).

Gray equalize: The default value is 1; generally, most Led screens don't need to adjust this item. The normal gray displays from darkness to brightness, as shown in below figure:

Some panels are not of good quality, so the gray doesn't display regularly; if users adjust this item, it is possible to make the gray normal. The adjust value range: 0-15.

Virtual display: if your display is virtual display, and it is under virtual mode, you should select this item.

Max width: One receiving card can support the max width pixels. It is close to refresh frequency, gray level and scan clock, and it will change with the three items.

Actual width: It refers to actual width of display.

Max height: One receiving card can support the max height pixels. It is close to drive board design.

Actual height: It refers to actual height of display.

Intelligent setup: There are 7 steps for it. (Some drive board will skip some steps when you testing it.) It is used to test drive mode and signal trend of drive board. After finishing the intelligent setup properly, your panel can work normally.

Load from files: If you tested this kind of panel before, and saved the drive setup, you can load corresponding file from computer directly, don't need to reset.

Save on files: After testing panel, our control system will detect the drive mode and signal trend of the panel, and then create a program file. You can name the file, and then save it in computer. Next time, you test the same kind of panel; you can load the program file from computer directly, and don't need to do "intelligent setup" again.

Send to receiver: After finishing the intelligent setup, you will change other items in the receiving card setup interface according to display requirement. Remember to click "Send to receiver" when you change data for one item or multiple items, otherwise, the setup won't put into effect. When you load from file to call program for testing same kind of panel, remember to click "Send to receiver", otherwise, the setup is not efficient, and receiving card can't work.

Save on receiver: Click this item can save the receiving card setup into the receiving card permanently.

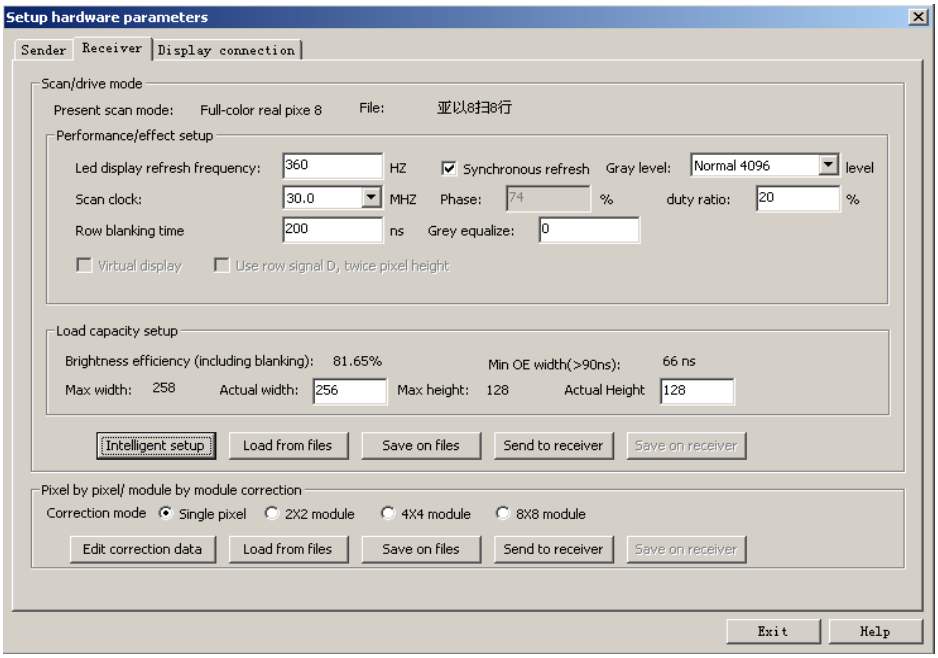
Pixel by pixel/ module by module correction: It includes four modes: single; 2*2 module; 4*4 module; 8* module. The pixel by pixel mode can support the max pixels 96*64=6144. If surpass the max pixels, please choose other modes.

Enter the receiver setup, remember not to change other items on the receiver setup interface first, begin with “Intelligent setup”. After finishing the “Intelligent setup”, operation interface will return to the receiver setup, users can adjust other items according to led display requirement.

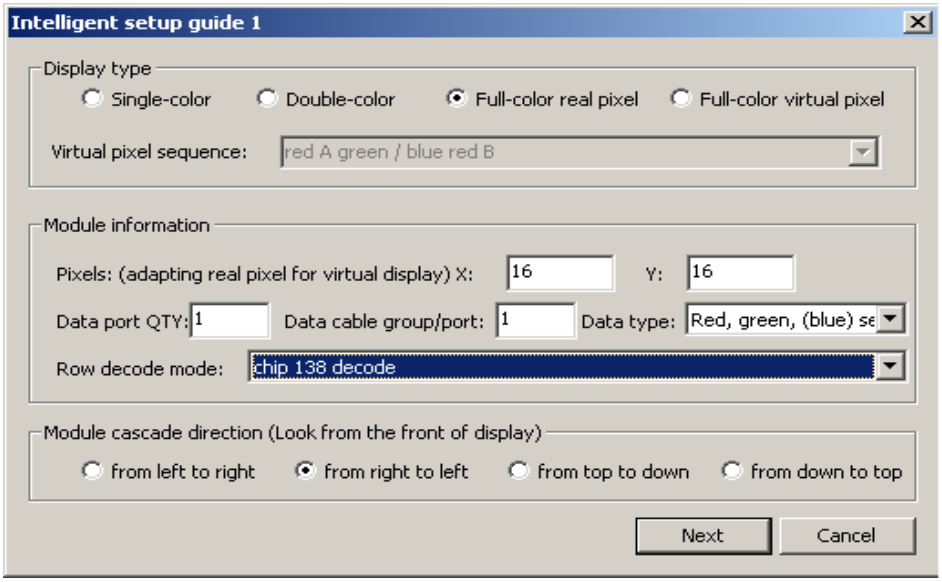
The setup for receiving card is also very simple; click “intelligent setup”, input required data following the instruction, then can recognize the scanning mode and signal trend, etc of the drive board; adjust the refresh frequency, shift clock, gray level, etc, then click “save the file”. If the drive board was setup before, just click “Load from file”, choose the correspondent program, then click “send to receiver”, then the card can work normally. Click “Save on receiver” can save the receiving card setup into the receiving card permanently.

Intelligent setups are shown below: (Make sure the correct connection for the flat connected panel with hub card, otherwise the “Intelligent setup” can’t recognize your panel properly. Entering the setup interface, users must do the operation and watch testing panel carefully at the same time, because all the operation setups must follow the panel’s instructions.)

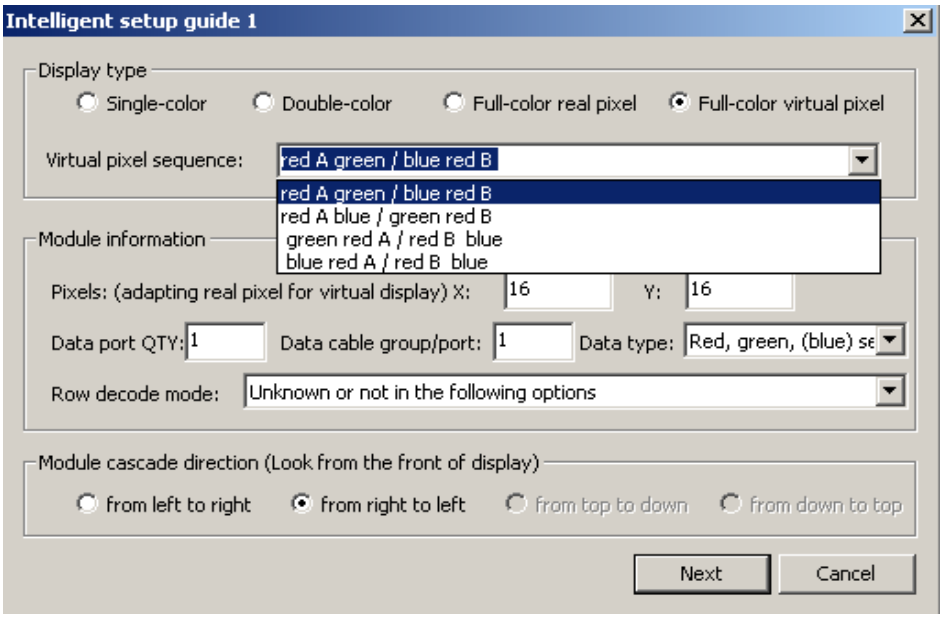
1. Click the “intelligent setup”



2. Choose the type of display (Single-color, double-color, full-color real pixel, full-color virtual pixel.)

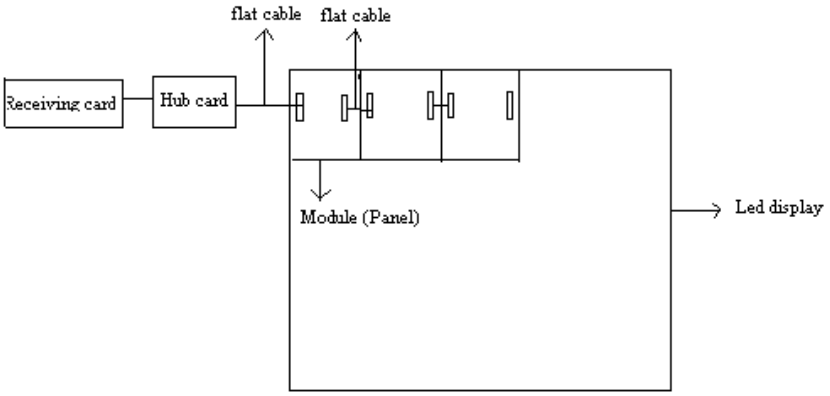


If display is virtual pixel, you should choose the right virtual pixel sequence; there are four choices in total, as shown in below figure.

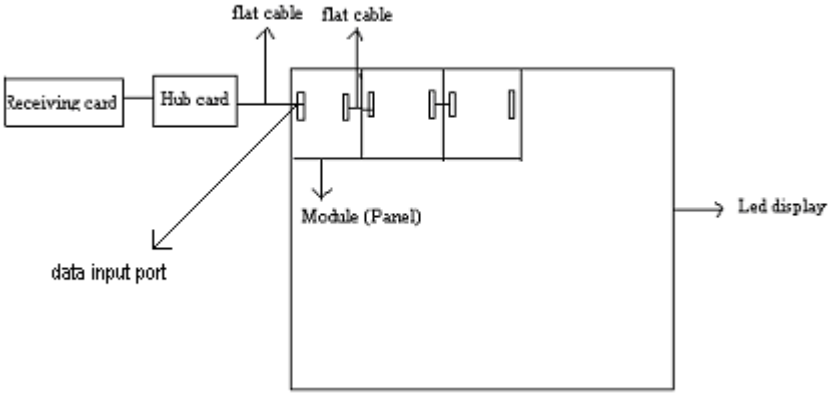


(Notice: one virtual pixel consists of two red light, one green light and one blue light. The up row one is red A, and the down row one is red B.)

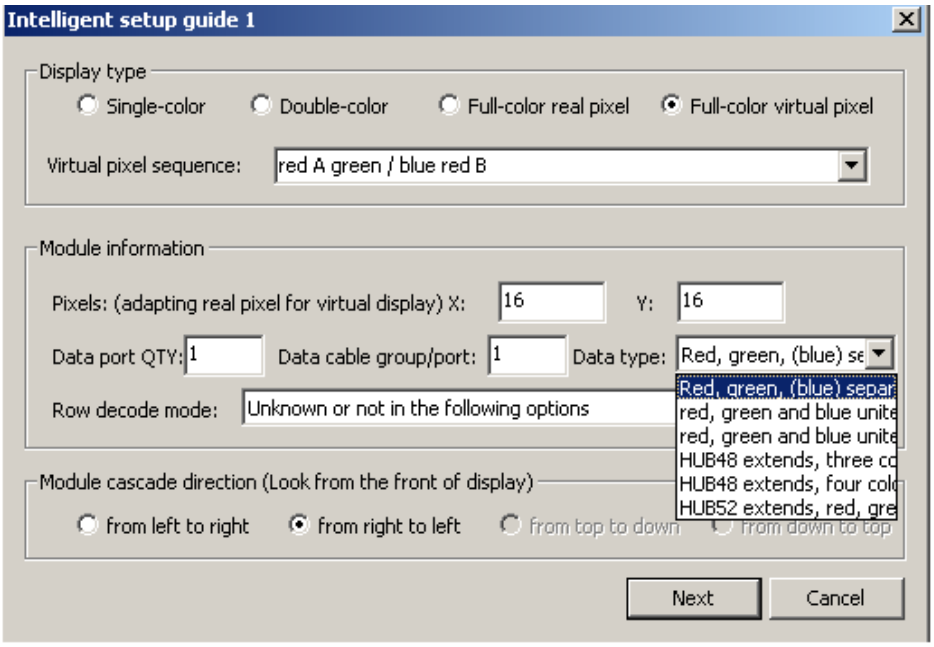
3. Input the pixels of a module (also called panel, shown in below figure), width (X), height (Y);



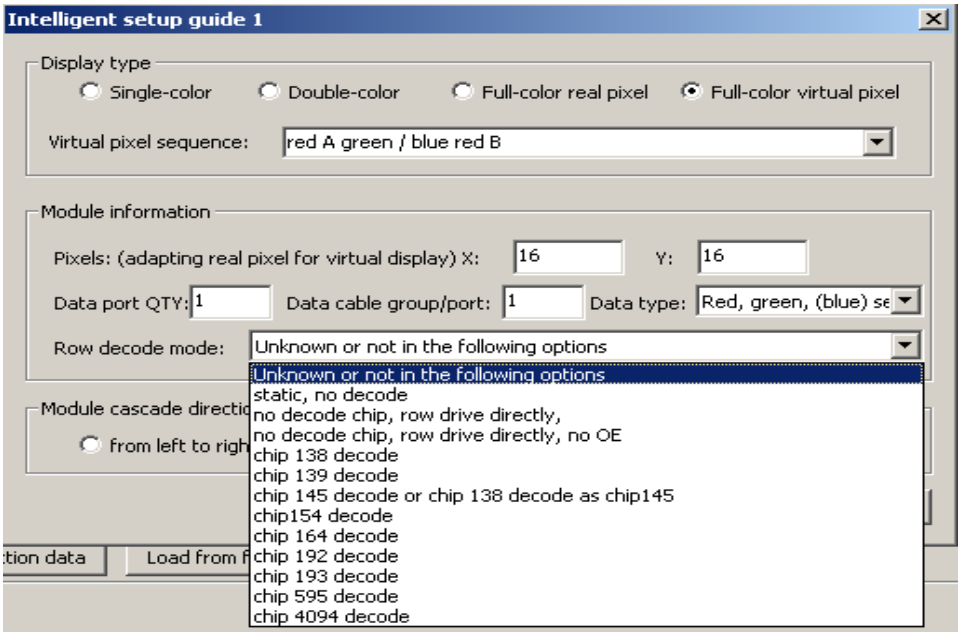
4. Type in the qty of the data input port, and the qty of data group for every data input port, taking the full-color as an example, data input port-- how many data input ports at back of each full color module; Data group-- how many R, G, B data groups for a full color module. as shown in below figure



5. Data type, (red, green, blue) red, green and blue unite as one, three colors serial; red, green and blue unite as one, four colors serial. Generally speaking, the first data type (Red, green, (blue) separately) for Led display, the other items for light-decoration.

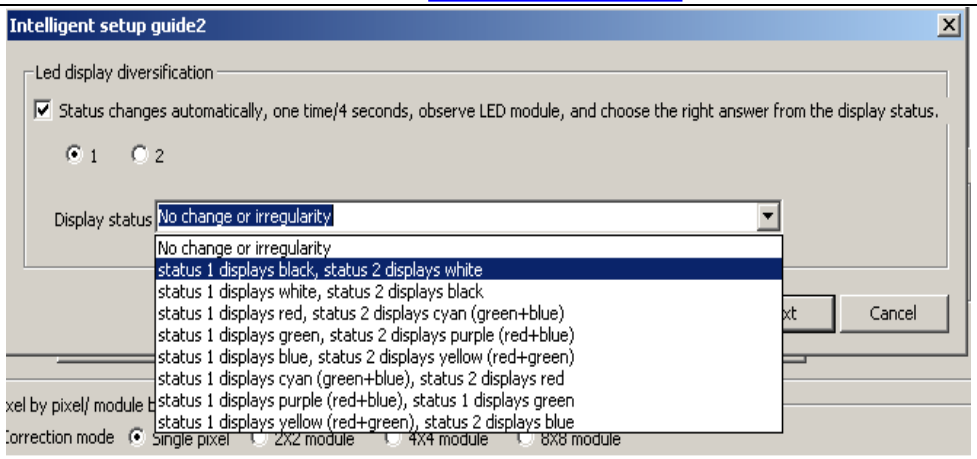


6. Choose the row decode mode (Unknown or not in the following options\static, no decode\no decode chip, row drive directly, with OE\no decode chip, row drive directly, no OE\chip 138 decode\chip 139 decode\chip 145 decode\chip154 decode\chip 164 decode\chip 192 decode\chip 193 decode\chip 595 decode\chip 4094 decode)

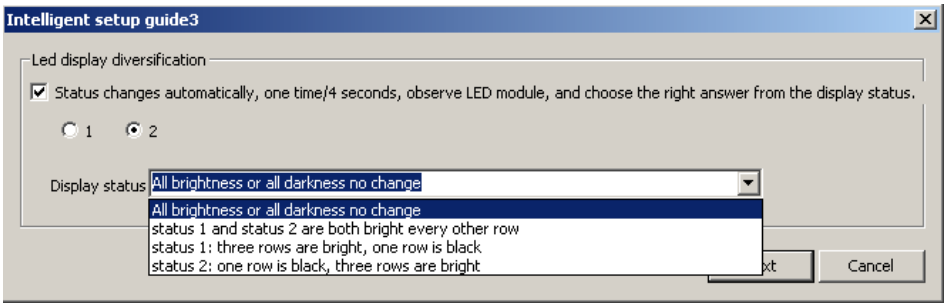


7. Module cascade direction, look from the front of display: data from right to left; from left to right; from top to down; from down to top. Choose right one according to your cascading modules.

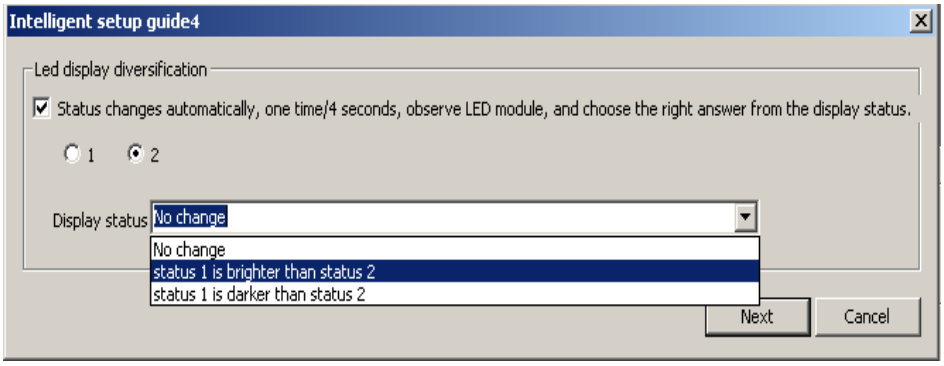
8. Watch module change: choose the right status, for example, status 1 shows white, and status 2 shows black.



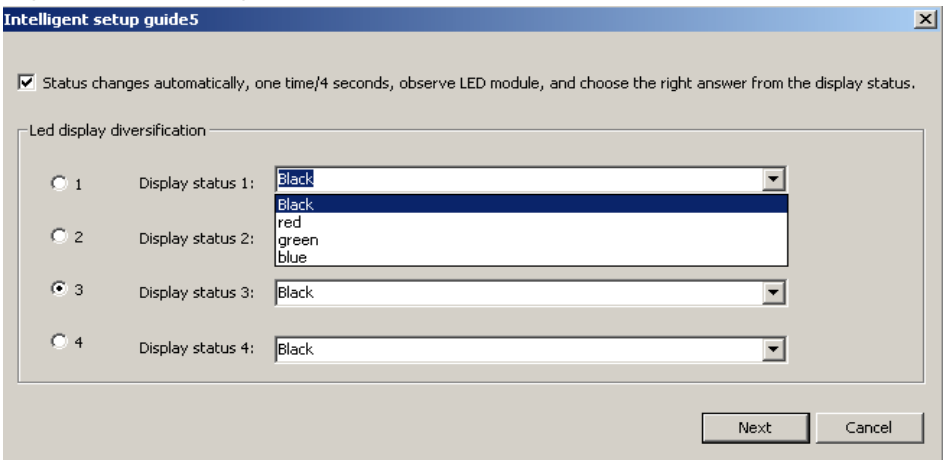
9. Watch the module, and choose the right status.



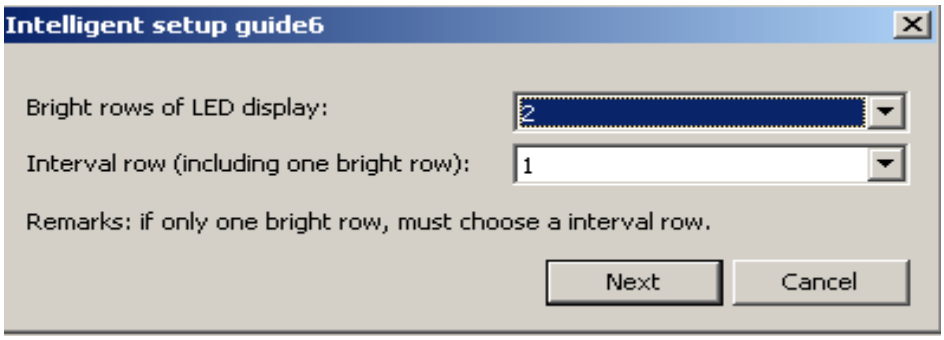
10. Compared status 1 with status2 of the module, watch which one is brighter, for example: status 1 is brighter than status 2. Choose the right one.



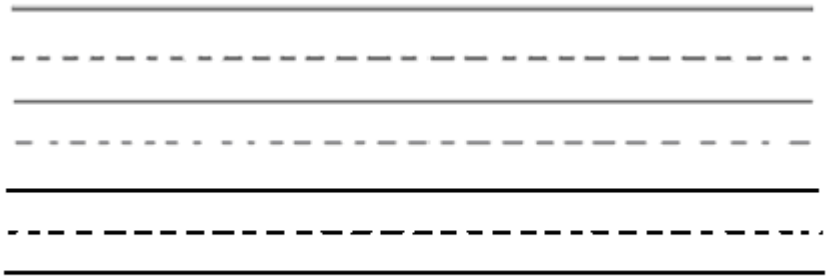
11. Watch the color that the module shows, for example, status 1 displays red, and status 2 displays green. Select the right one.



12. Watch the module: one row is bright or multiple rows are bright; when multiple rows are bright, check how many interval rows. As shown in below figure.

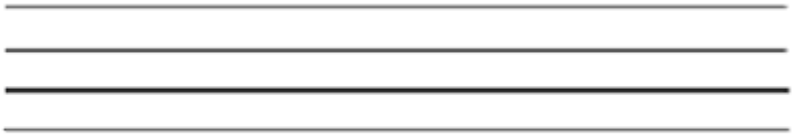


Notice: Interval rows mean how many black (dim) rows between two bright rows, and then add one bright row for the total interval rows. (You must figure out all the bright rows in the panel, but for the interval rows, you only need to figure out how many rows between two bright rows.) For example, as shown in below figure, there is one black (mid) row between two bright rows, choose 2 (1+1=2) rows for the interval rows, 4 rows for bright row.



Notice: The real line stands for bright row, and the dashed for interval row.

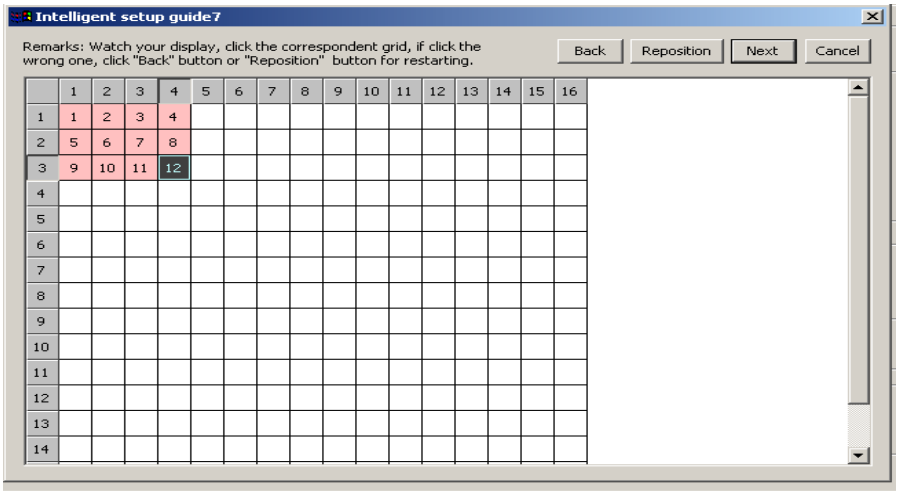
If there is no black (mid) row between the bright rows, select 1 row for the interval row, as shown in below figure: 4 rows for bright rows, and 1 for interval row.



Notice: The real line stands for bright row

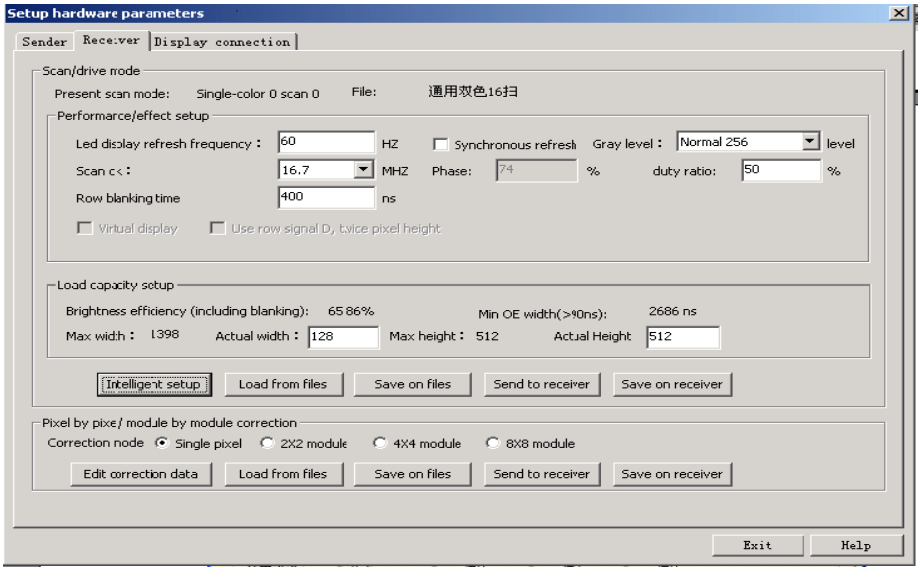
Choose the right one according to your module.

13. Watch which pixel is bright in the module, then click the corresponding grid on the computer screen, after clicking the grid, you will find another pixel will be bright on the module, then you continue to click the corresponding grid on the computer screen, after click it, another pixel will be bright on the module…. By analogy, follow the instruction on the module; the computer will inform you when all the pixels are choice-finish.



14. After finishing “intelligent setup”, send it to the receiver; if saving it into file in computer, you can load it from the file directly when you use this kind of module next time.

15. Setup the refresh frequency and gray level according to requirement of your Led display.

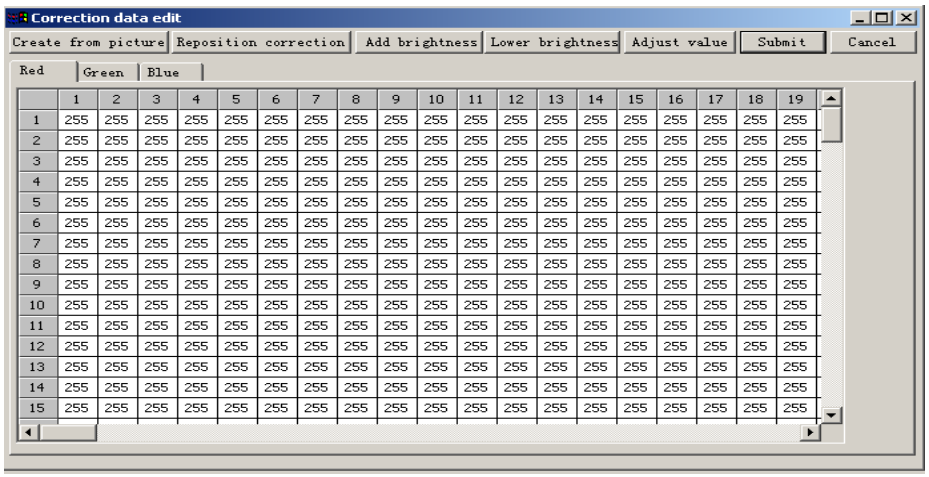


Pixel by pixel correction data setup steps

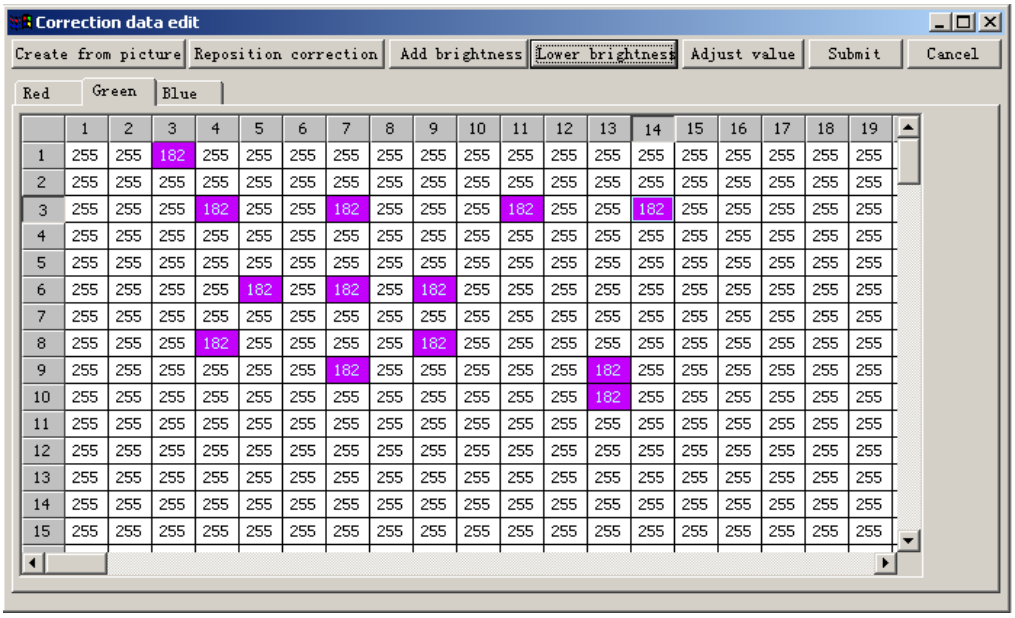
(1). Setup actual width pixel and actual height pixel for your display (cabinet), and then click “Send to receiver”.

(2).Choose the correction mode: Single pixel, 2*2 module, 4×4 module, 8×8 module. (Remarks: single pixel correction can support the max pixel 96*64=6144, if surpass, please choose other correction modes.)

(3). Click “Edit correction data”, shown in below figure.



① **Correction by hand:** Select the color that needs to be corrected (red, green, blue), and choose the pixels that require to be corrected, using ctrl key can select multiple pixels; then click "Add brightness" or "lower brightness", adjust the ideal brightness, as shown in below figure,



and then click "Submit", then click "Send to receiver"; click" Save to receiver" can save it permanently. Making a backup in the computer file in order not lose the data.

② **Create from picture:**

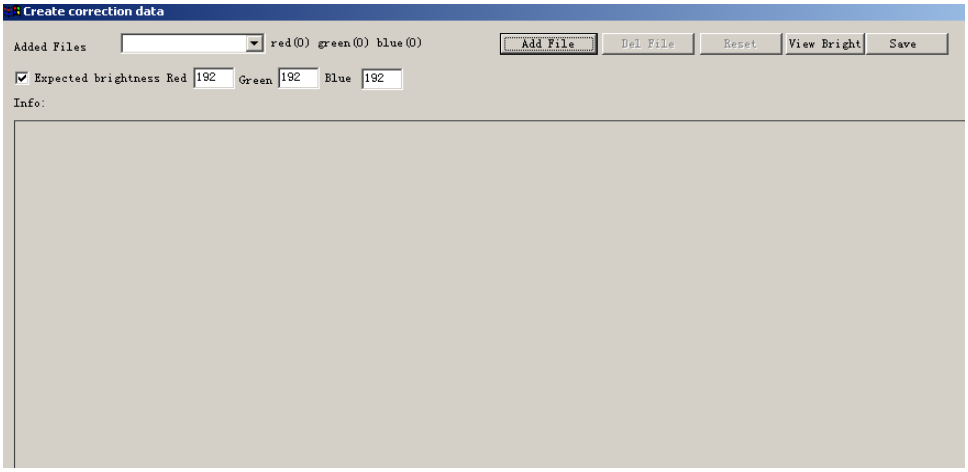
A: Using high-class camera. Camera request: adopting professional camera; Pixel resolution is over 10 million pixels; advising to use CANON, EOS400D and CANON EOS5D, and EOS400D has been tested already, and the effect is pretty good.

B: Connecting a receiving card with the Led display or cabinet required correction, and setup the receiving card as no gray level or gray level 4 or gray level 8, and refresh frequency as above 1500HZ, and selecting the item "Synchronous refresh".

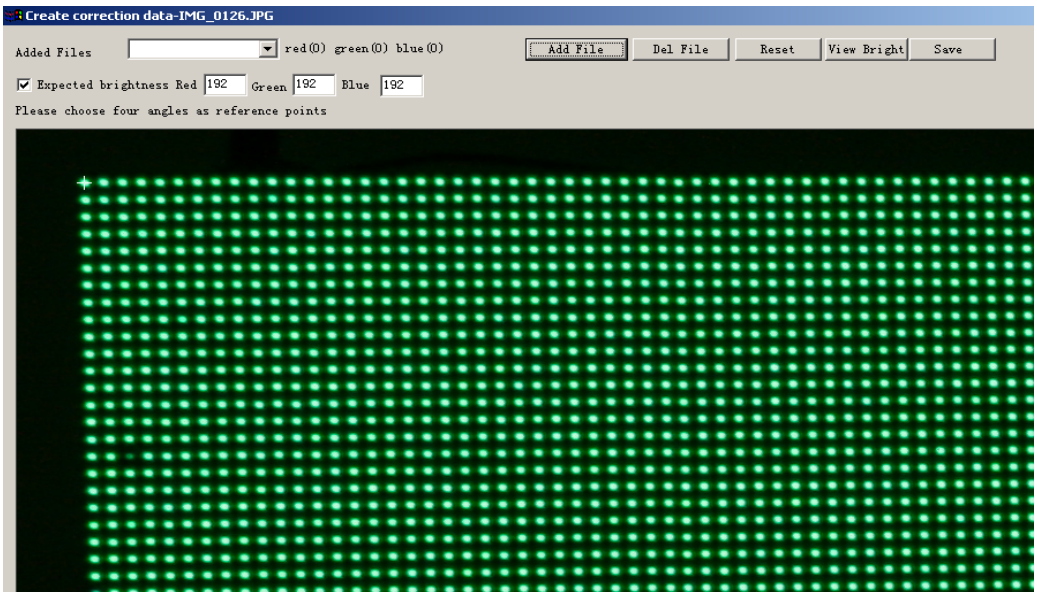
C: Making screen display red, green, blue separately, take 3 or 5 pictures for each color. (Request: fix the camera by mount, facing the Led screen; adjust the camera and take a picture,

make sure you can see obvious septation among pixels from the picture; you'd better to adopt manual operation.

D: Transmitting the pictures to computer, click "Create from picture", as shown in below figure

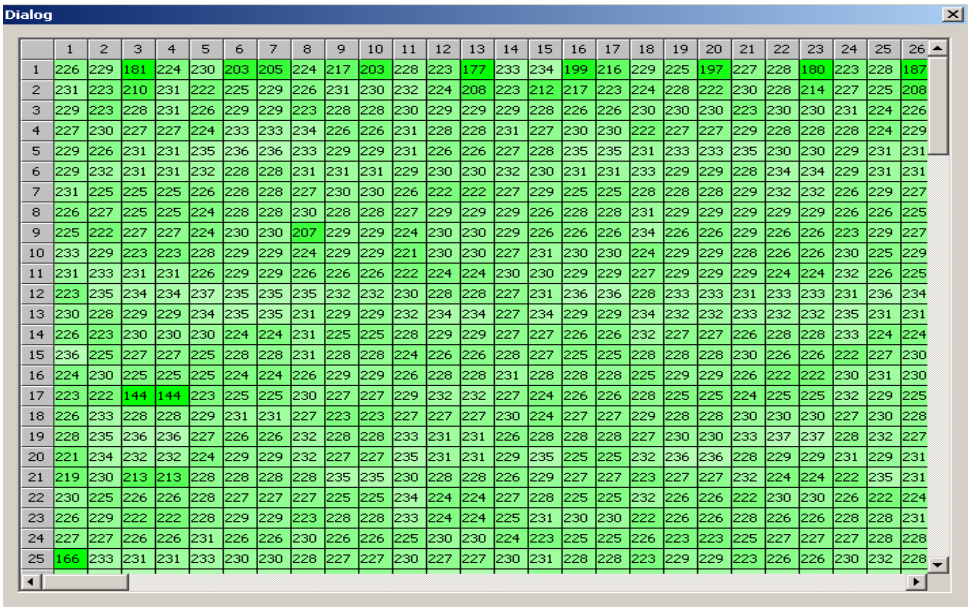


and click "Add file" to add the pictures; every picture will be informed to choose the pixels in the four angles for position fixing;



when select the picture, make sure the cross in the center of every pixel. After selecting, computer will mark all the pixels, as shown in below figure.

and then check all the marked pixels, if error, click “Reset” for reselecting the four angles for the picture; if after several choices, and computer can’t mark all the pixels correctly, please click “Delete picture”, and then take three photos for the color again; if you want to view brightness for every pixel, please click “View brightness”.



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1	226	229	181	224	230	203	205	224	217	203	228	223	177	233	234	199	216	229	225	197	227	228	180	223	228	187
2	231	223	210	231	222	225	229	226	231	230	232	224	208	223	212	217	223	224	228	222	230	228	214	227	225	208
3	229	223	228	231	226	229	229	223	228	228	230	229	229	229	228	226	226	230	230	230	223	230	230	231	224	226
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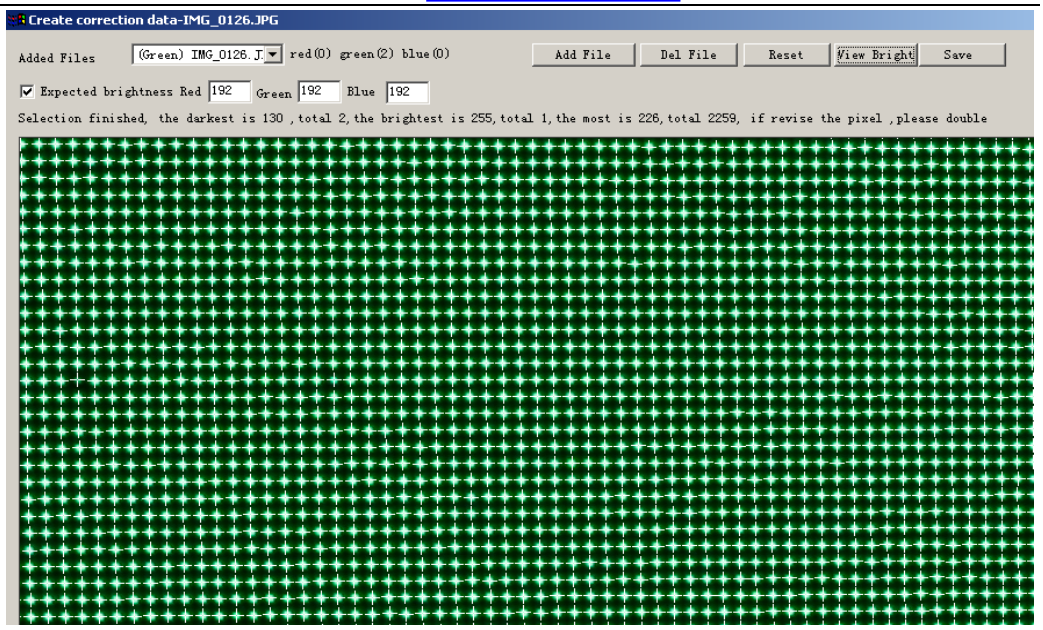
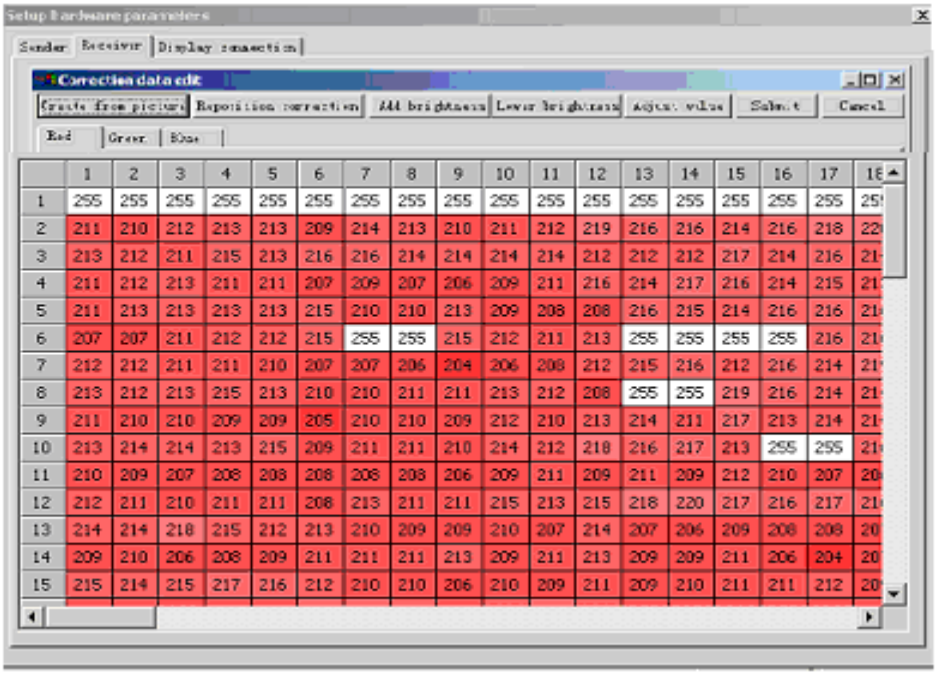
17	223	222	144	144	223	225	225	230	227	227	229	232	232	227	224	226	226	228	225	225	224	225	225	232	229	225
18	226	233	228	228	229	231	231	227	223	223	227	227	227	230	224	227	227	229	228	228	230	230	230	227	230	228
19	228	235	236	236	227	226	226	232	228	228	233	231	231	226	228	228	228	227	230	230	233	237	237	228	232	227
20	221	234	232	232	224	229	229	232	227	227	235	231	231	229	235	225	225	232	236	236	228	229	229	231	229	231
21	219	230	213	213	228	228	228	228	235	235	230	228	228	226	229	227	227	223	227	227	232	224	224	222	235	231
22	230	225	226	226	228	227	227	227	225	225	234	224	224	227	228	225	225	232	226	226	222	230	230	226	222	224
23	226	229	222	222	228	229	229	223	228	228	233	224	224	225	231	230	230	222	226	226	228	226	226	228	228	231
24	227	227	226	226	231	226	226	230	226	226	225	230	230	224	223	225	225	226	223	223	225	227	227	227	228	228
25	166	233	231	231	233	230	230	228	227	227	230	227	227	230	231	228	228	223	229	229	223	226	226	230	232	228

Select all the pictures of the cabinet, the software can recognize how many pictures for each color (red, green, blue), and mark the number of lowest brightness pixel, highest brightness pixel and most pixels with same brightness. As shown in below figure.



E: Setup the expected brightness, and select a value between the lowest brightness and the most pixels brightness as the expected brightness according to every light brightness; every cabinet should choose the same expected brightness in order to make each cabinet's brightness consistent.

F: After click "Save", software will switch each picture brightness into pixel correction data, and then fill into correction table. As shown in below figure.



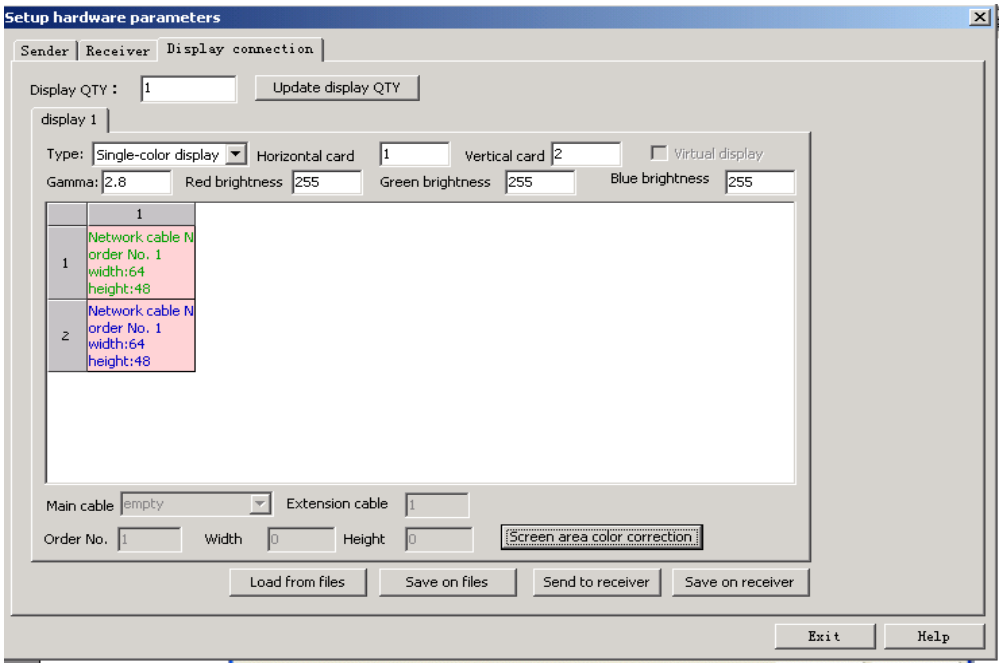
(4). Click "Submit" first, and then click "Send to receiver"; after checking no error, click "Save on receiver", and "Save on files".

IV. Led display connection setup

1. Connecting your display with control system well. (Remarks: make sure the receiving

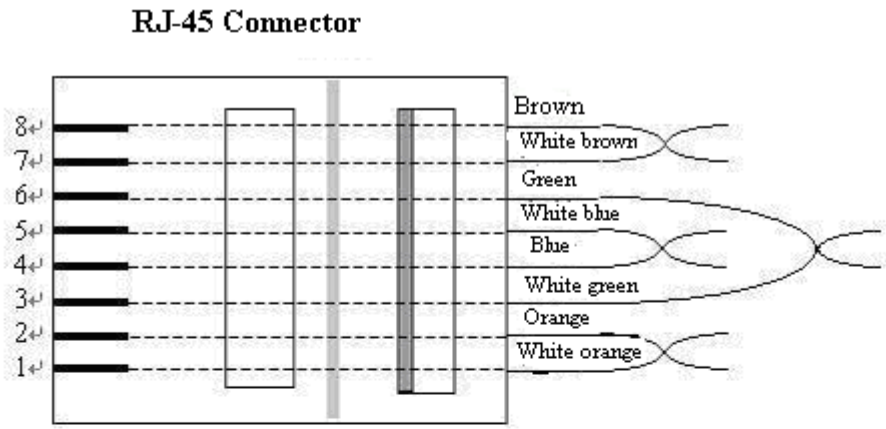
card port A as input port, and port B as output port; or port B as input port, port A as output port. For example, when you connect the receiving cards, the port A must connect with next receiving card port B, and then the port B must connect with next receiving card port A. By analogy, connecting all receiving cards. Otherwise, receiving cards can't work. The sending card uses the port U (near the lights) to connect receiving card.)

2.Shown in below figure, click "Display connection", input display QTY, for example, if a sending card supports 3 displays, input number: 3, if one, input number: 1;then click "Update display QTY ", and setup type of screen, such as full-color, double-color, etc., and input the card qty, X (width), Y (height), then the computer will show the plan, setup the receiving card connected with the sending card as the first one, then input correspondent data, for example, main cable: No.1, extension cable: 1, order No.: 1, width: 192, height: 128; then setup the receiving card connected with the fist receiving card as second one, then input the correspondent data, by analogy, setup other receiving cards like this according to the order of receiving card connection at back of screen； then click "Send to receiver". Each receiving card can be setup to support the same pixels or different pixels or no pixel (suitable for irregular screen.), and then send the data to receiving card or save it in the computer file.

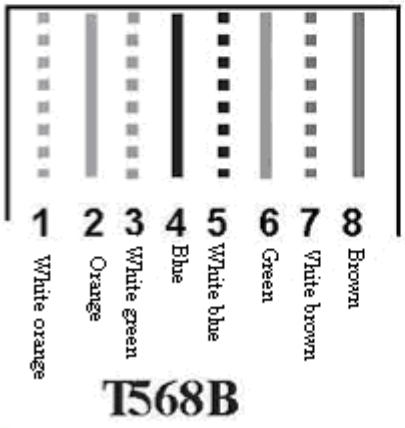


Chapter III The Communication Cable Making Method

The communication cable for model 701 and 702 is different from the cable for linsn sixth generation control system. The making method of cable is the same as that of international standard network cable. It has two types: 568A and 568B, and we usually use 568B.



RJ45 Connector TIA/EIA 568B Criterion



Remarks: make the two ends same.