# Asynchronous Full-color Controller-HD-C3

# Operating Manual

# Contents

## 1. Hardware Connection

As shown in Figure 1, C3 Controller is connected to Computer and the HUB board of the LED display screen.



Figure 1 Device Connecting Schematic Diagram

1) Connect to the LED Screen

- Connect the controller and the HUB board.

- Connect the HUB board and the LED screen with the cable.

- Arrow direction on HUB board keep the same on controller.

- If only one cable needed, connect to HUB1.

- Ensure that cable connection is correct and firm.

2) Connect to the Network

- Connect the controller to a Computer (PC) with a normal or crossed networking wire.

- Further more, controller can be connected to a PC through LAN (Local Area Network).

3) Connect to the *Power Board*

- The controller support 4.5V-6V voltage.

- After receiving electrify source, the *POWER* indicator light will be long bright, while *RUN* indicator uniform flash and *ERROR* indicator does not shine.

4) Connect to the *Expansion Boards*

C3 Controller supports 384pixel*256pixel display, but ordinary HUB boards

only support 8 cable output. So it is required to use expansion boards if output doubled.
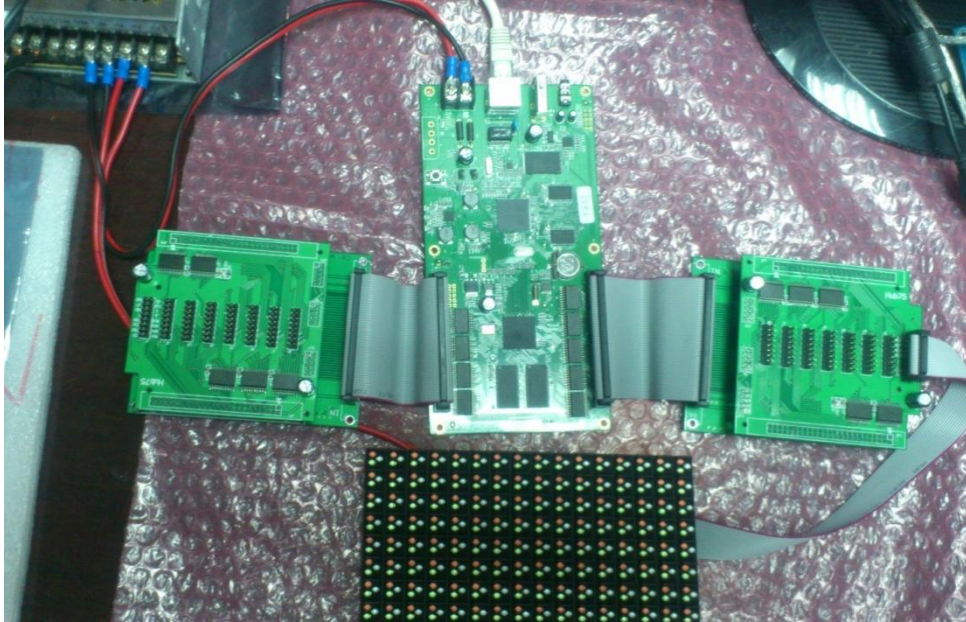


Figure 2 - Device Connecting when using expansion boards

The HUB1 and HUB2 of the controller are connected to an expansion board with a 50PIN Cable respectively. And then connect the expansion boards to the ordinary HUB boards. In this way, the controller support 16 cable output.

Be reminded that HUB1 (figure on right) should be connected to the screen high 8 cables while HUB2 connected to low 8 cables.

## 2. Network Setting

As mentioned above, C3 controller can be connected to a PC with a network wire directly or through a LAN, both support *Plug and Play*.

When the computer and the controller is directly connected by a network cable, plug in the network cable, the network port lights. It means the connection is OK as shown in figure 3 after a few seconds waiting. It takes less than 5 seconds for *Windows 7* Operation System while less than 20 seconds for *Windows XP.*



Figure 3 Schematic Diagram that *Network connection is OK*

When connected through a LAN, the controller supports *Cluster Management* which means all controllers in the same LAN can be managed by one PC at the same time.

## 3. Hardware Setting

Left-click *Setting->Hardware Setting* of the *LedArt* to enter Hardware Setting. Using *LedArt*, multi controllers can be set with easy switching.

It is required to set hardware parameters in *Smart Setting* when the controller is set at first time. Save well-set files for same LED modules using next time. Therefore it is not need to set parameters again.
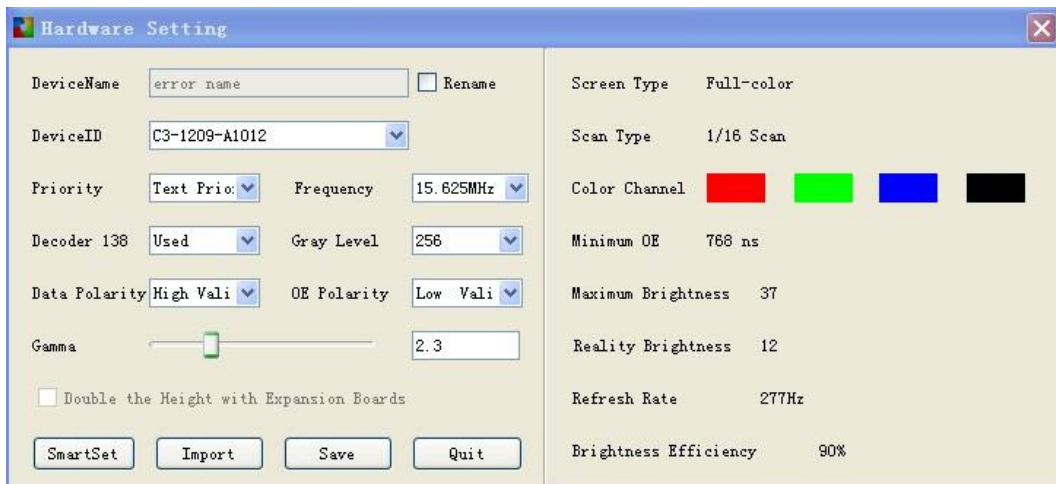


Figure 4 Hardware Setting Interface

1) Basic Setting

- Switch the **DeviceID** to select the controllers that has been connected to the PC.

- Check *Rename* to set a custom name for different controller.

- *Set the Priority, Frequency, 138 Decoder, Gray level, Data Polarity, OE Polarity, Gamma directly, and the setting effect can be checked on the LED screen at the same time.*

- Feature of **Double the Height with Expansion Board** will be activated after *Smart Setting*. Check this option to activate the load height double feature. And then the controller supports 16 lines output. *Note it is not able to use this feature in 1/16 scan module.*

2) Smart Setting

We recommend user enter *Smart Setting* before the first time *Hardware Setting*. With the auto-judgment, users who are not familiar with the screen module can set the hardware parameters easily. No need to set *138 Decoder, Data Polarity, OE Polarity* after Smart Setting.

There are five steps in the *Smart Setting- Basic Setting, Data Polarity Setting, OE Polarity Setting, Color Channel Setting, and Alignment Description.* Details as follows:

a) Basic Setting



Figure 5 Screen basic setting

**Screen Type**: Single / Double Color or Full-color

**Height**:　the height of the module

**Width**:

　The smallest repeating row unit of the module, or its multiple.

**Lines per module:**

　The number of lines that a module includes.

**Signals per line**:

　The number of RGB groups, according to the line/cable definition on the back of the module.

**Scan:**

　The scan type of the module, such as Static, 1/2 Scan, 1/4 Scan, 1/8 Scan, 1/16 Scan.

**Use 138 Decoder**:

　Check whether 138 Decoder is used on the module.

b) Data Polarity Setting

　Observe the module in State A and B, and then select the corresponding Display Status.
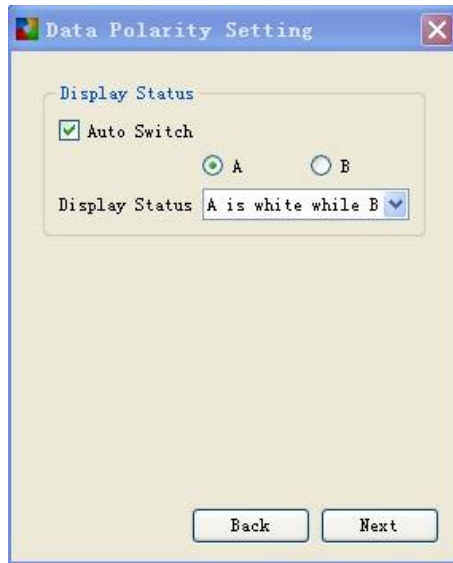
Figure 6 Data Polarity Setting

c) OE Polarity Setting

Observe the module in State A and B, and then select the corresponding Display Status.
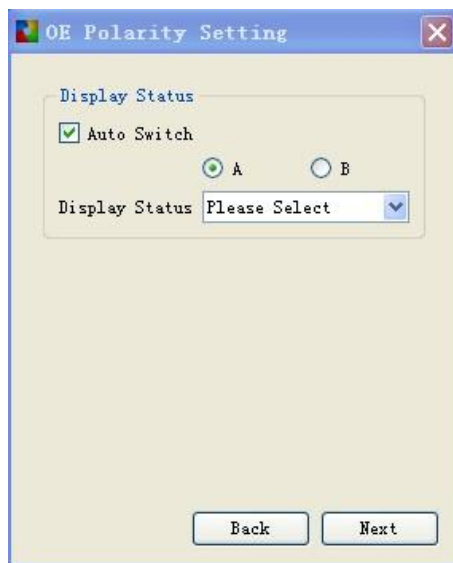


Figure 7 OE Polarity Setting

d) Color Channel Setting

Observe the module in State A, B, C and D, and then select the corresponding Color.
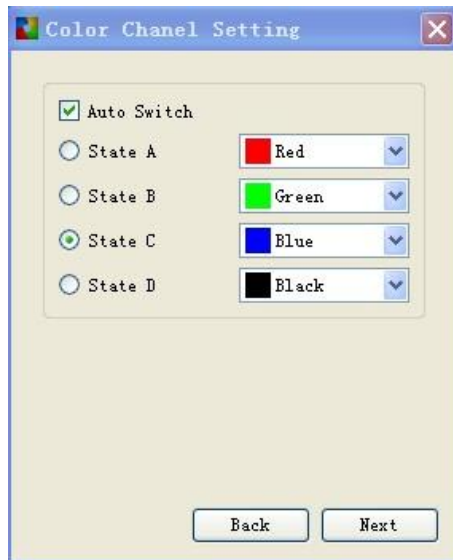
Figure 8 Color Channel Setting

e) Alignment Description

Observe the module, click on the location of the form which is corresponding to the location highlights on the module. After all the description, save the setting file and exit the *Smart Setting*.
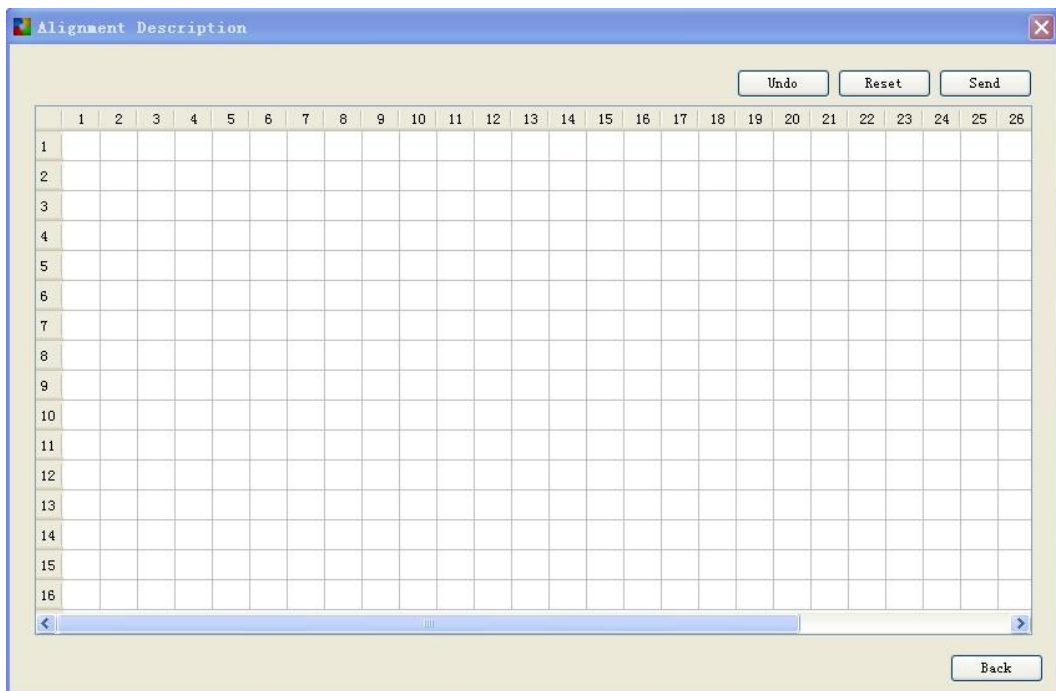


Figure 9 Alignment Description

**Undo:** Step back to the previous step when describe a wrong point.

**Reset:** Clear all description.

**Send:** Send the current description to the controller.

The Smart Setting file can be saved in the computer. And it can be imported directly when using the same type module next time.

3) Parameter Explanation

a) Device ID

The *Device ID* is the Serial Number of the controller. As a unique identification for the controller, it can not be modified.

Take C3-1208-A1001 for an example, it means this controller is manufactured in August, 2012. It is the 1,001th C3 controller with ordinary version.

b) Device Name

It is the name of the controller. When several controllers are connected to the computer in the LAN, it is able to make a distinction between them with custom names.

c) Priority

For better displaying effect, it is recommended to choose Image Priority when playing video or image while Text Priority when displaying text.

d) Frequency

The Frequency means the shift frequency of the scan program. Its range is 3.125MHz-31.25MHz. It is better to set the frequency lower than 25MHz since working frequency of most LED screen driver ICs is lower than 25MHz.

e) 138 Decoder

Check whether the 138 decoder is used in the module.

f) Gray Level

The Gray Level is used to represent the color richness. The higher, the better. The C3 controller supports the gray level like non-gray, 4, 8, 16, 32, 64, 128, 256, 512, 1024.

g) Data Polarity

High effective and low effective for choice. If choose high effective, the LED light will be lighten up and with high data, it would be shut down with low data. And vice versa.

h) OE Polarity

The OE Polarity with same features as Data Polarity.

i) Gamma

The Gamma is used to represent the contrast degree between light and dark. The higher the Gamma is, the more obvious the contrast is.

It supports to set 1.0-6.0.

j) Color Channel Setting

It means the RGB color channel of the module.

k) Minimum OE

It means the minimum of the OE pulse width values in the LED scanning time series. Its unit is ns.

l) Maximum Brightness

The maximum brightness value calculated for the refresh rate no less than 100Hz.

m) Refresh Rate

It means the scanning frequency of the LED screen. The higher the refresh rate is, the more smooth the image looks. When the refresh rate is less than 100Hz, the image of the screen will have obvious jitter. The refresh rate will be set no less than 100Hz automatically.

n) Brightness Efficiency

The higher the brightness efficiency is, the brighter the screen looks. It is calculated automatically too.

The screen displays alright after the hardware setting and parameters setting. Users are able to edit the program.

## 4. Program Editing

It is very easy to edit the program using the LedArt. Take a program with a *Video* window, a *Text* window, an *Image* window and a *Clock* window for an example.

1) Create A New Screen

Click on the File - >New, a new screen can be created. And to delete it, click fast operation *Delete* button.

Enter the *Screen Parameters Setting* interface to set related parameters of the screen.
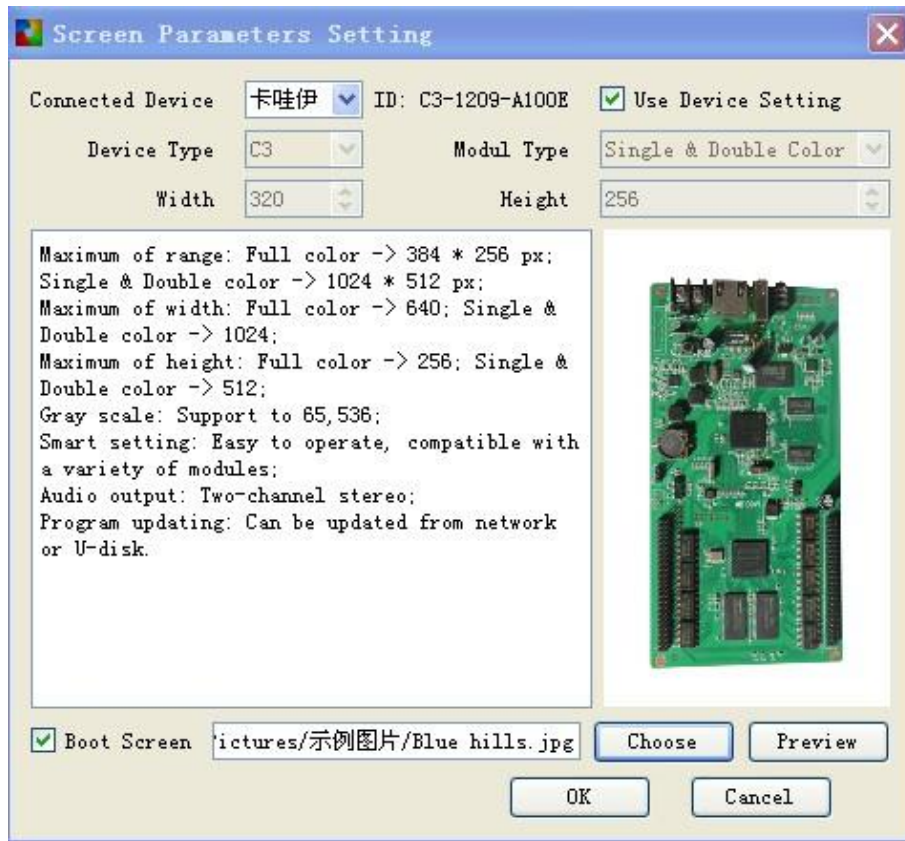
Figure 10 Screen Parameters Setting

a) Select *Use Device Setting* to read back the parameters in the controllers that has been connected.

b) No select *Use Device Setting, device type*, *Module Type*, *Width* and *Height* of the screen could be set directly.

c) The *Boot Screen* could be customized if needed, such as Logo of a company.

As shown in Figure 11, after a new screen created, if some controllers have been connected to the computer, its information will be shown in the *Device Information* column.
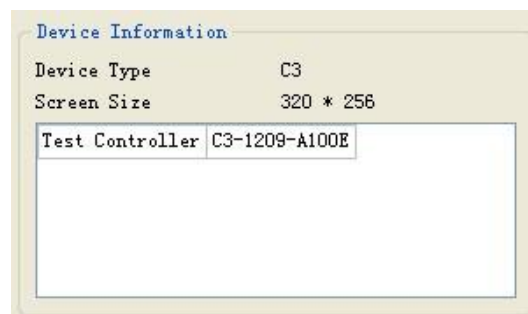


Figure 11 Device connected information

If there is one controller connected to the computer, it will bundle with the

computer directly. While several controllers are connected to the computer, users need to enter *Control ->Communication Setting* to bind with the computer.

The LedArt supports Rename, Delete, Create a Screen, Add a Program, Sending Program, Close a Screen, etc. Users could right click on the button to select the relevant operation.

2) LED Screen Attributes Setting

Users can set brightness, time switch at the attributes of LED screen, it will take effect after program being sent to the controller.
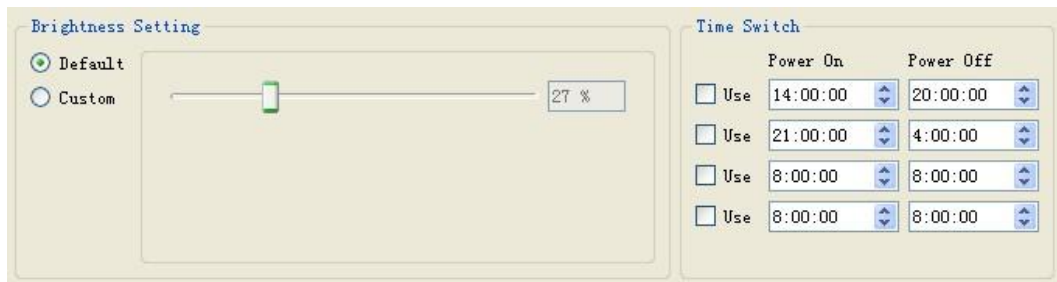


Figure 12    LED Screen Attributes Setting

3) Create A New Program

Click *Program* button to create a new program. To delete the program, just click *Delete* button.



Figure 13 Create a New Program

Controllers supports operation like *Rename, Delete, Create, Copy, Move,* etc. Users can click right button to select relevant operation.

4) Program Attributes Setting

Users can set *Play mode, Background, Time* at the attributes column of A *Program,* settings can take effect after program being sent to the controller.
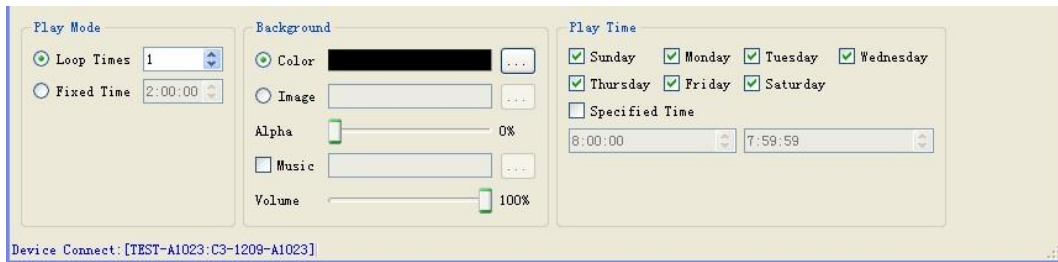
Figure 14    Program Attributes Setting

Please note it will be abnormal if voice of background music and video plays at same time. Users are required to add background music without video.

Users can set Track time via week and designated time setting. Attention: after setting Track time, screen will only display within the fixed time.

5)   New Video and Setting

Click the shortcuts column of *Video* to set the new video area. If you want to delete *Video*, click the shortcuts *Delete* to realize.



Figure15 New Video

Video setting process as follows:

a)   Input figure or drag video border to set the video position and size.

b)   *Click Set* button to confirm the video position and size.

c)   Select video file and click  to add video.

d)   Click  ,  ,  to operate the video.

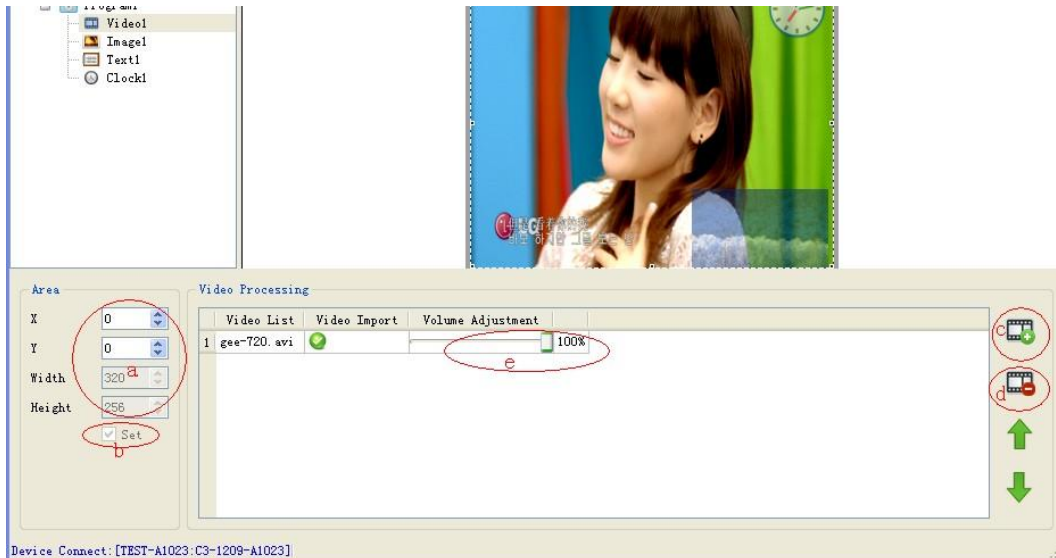e)   Adjust the VOL of the screen by previewing VOL of video.

Figure 16 Video Setting Process

In order not to cover other district, video is defaulted to be in the bottom of screen . Other district follows sequences as first come first existed rule, which means the last added one will be display on the top.

Software support operation like *Rename, Delete, Create, Copy, Move* etc., User can click right key to choose the corresponding operation. The operation of *Image, Text, Clock* with same process, please refer to the setting process of *Video*, will not make a restatement.

6)   New Image and Setting

Click the shortcuts column of *Image* to set new image. If you want to delete image, you only need to click the shortcuts column *Delete*.



Figure 17 New image

The setting process of Image:

a)   Input figure or drag image border to set the image position and size.

b)   Set the transparency of image.

c)   Select image file and click            to add the image

d)   Click delete, move up and move down to operate the image.

e) Select the special effect of image.



Figure 18 Setting process of Image

Image support *no effect, move left,* etc. Total 40 kinds of effect.

7) New Text and Setting

Click the shortcuts column of *Text* to set new text, If you want to delete Text, only click the shortcuts column of *Delete* is ok.



Figure 19 New Text

The setting process of Text:

a) Input figure or drag text border to set the text position and size.

b) Set the transparency of fonts

c) Support input font or import text format like Word、TXT、RTF etc.

d) Support to edit the format of fonts.
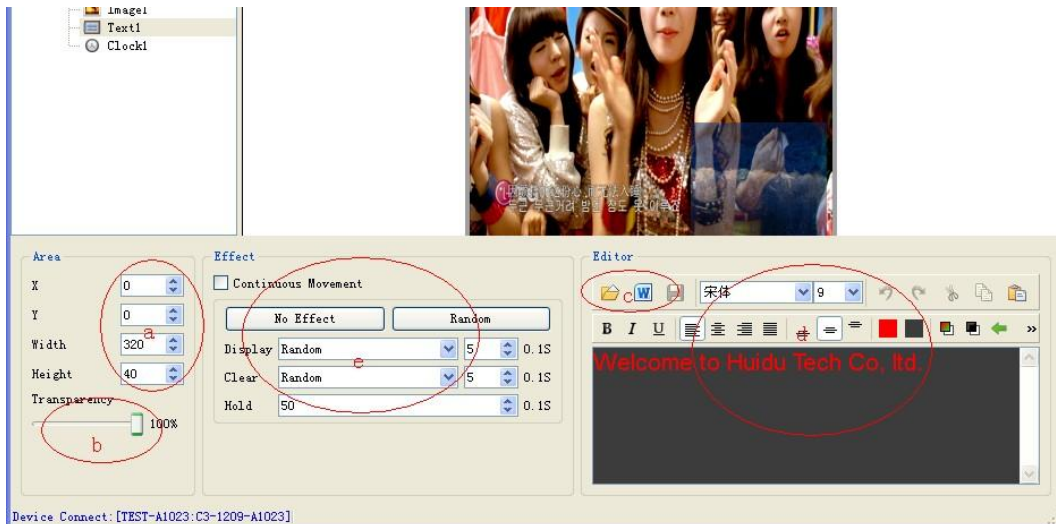
e) Select the special effect of font.

Figure 20 The setting process of Text

Text support *no effect, move left,* etc. Total 40 kinds of effect. Also support *continuous cover left, cover right ,cover up*, etc. Support setting move speed by time and frames, make it easily when user apply large number of text display.

8) Clock Setting

Click the shortcuts column of *Clock* to set new clock, If you want to delete Clock, only click the shortcuts column of *Delete* is ok.



Figure 21 New Clock

LedArt support three clock format : Analog Clock , Digital Clock, Pixmap Clock.

*Clock* area setting process:

a) Input figure or drag clock border from preview window to set the clock area position and size.

b) Set transparency of the clock.

c) Select the format of clock.

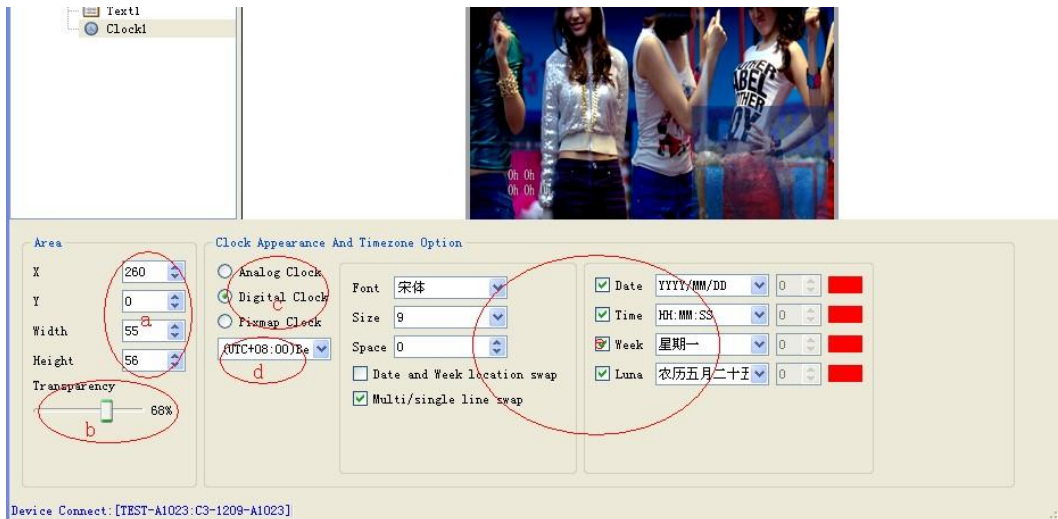d) Select time zone.

e) Set Scale.

Figure 22 Clock Setting Process
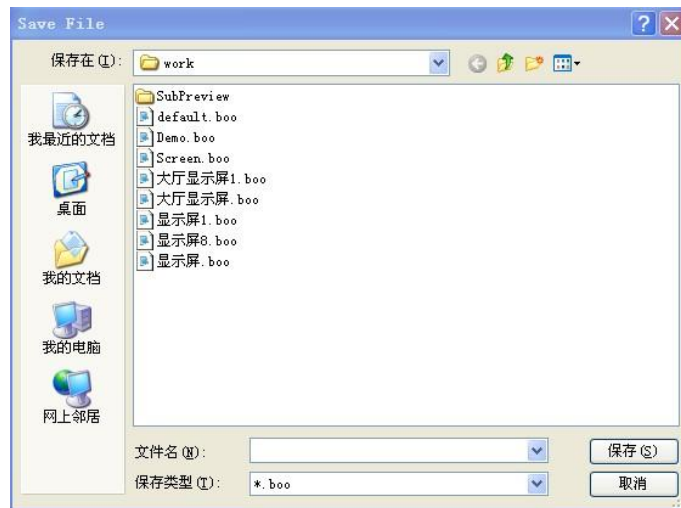
9) Program Saving

Click selected file, click Save.



Figure 23 Program Save

## 5. Program upgrade

Program can be sent to the controller after being edited. C3 controller supports upgrading the program through LAN or U-disk. Meanwhile, it also supports expanding memory infinitely through U-disk.
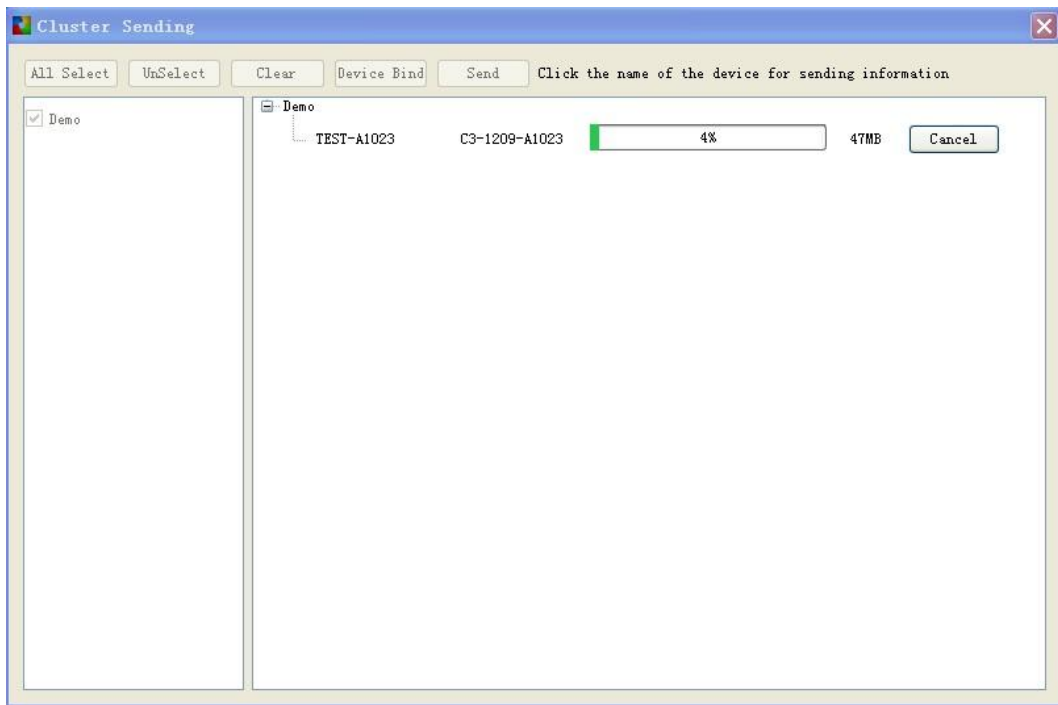
1) Network Cluster Sending



Figure 24 Network cluster send

Before sending the program, enter into *Control->Communication setting* to bind the *Display* and controller. When one *Program* connected to several controllers, it will be sent to all the controllers, which is so called network cluster sending. When several *Program* connected to one controller, the present program will replace the previous one.

Click *Control-> Cluster send* or shortcut key *Send* to send the *Program* to all connected controllers.

The storage capacity of the onboard flash is up to 300M byte. If large files need, U-disk can be used to expand, plug and play.

2) Upgrade Program by U-disk

After insert U-disk, *Click Control -> Export to U-disk* or click shortcut key *Export to U-disk*，select *Program Upgrade*, then the program will be exported to U-disk.

■ Insert U-disk into controller, the program in the U-disk will be copied to onboard flash by controller , also the screen will appear some tips for reminding.

■ Finish copy, user can pull out U- disk, screen will play new program immediately.

■ Only repeat the above operation if you want to upgrade the program

again.

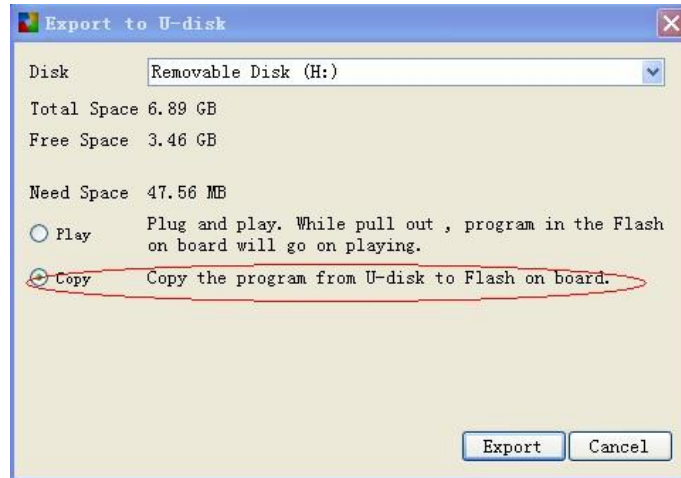■ Support USB extending line within 10 meters.



Figure 25 upgrade the program by U-disk

3) U-disk Infinitely Expand Memory

Select *Play* when program export out from U-disk. Insert the U-disk into controller, program will play at once (Plug and play, no need restart).In this way, user can expand memory by U-disk space.

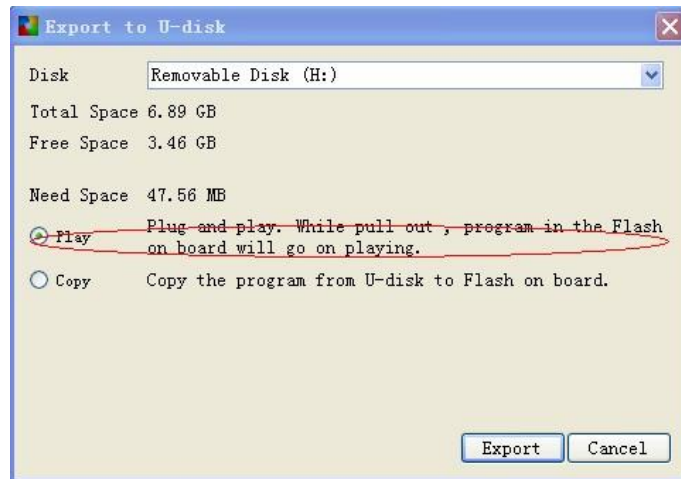It supports USB extending line within 10 meters as well.



Figure 26 Export U-disk and play directly

## 6. System Setting

Click *Setting -> System Setting* to enter into LedArt software setting, includes: *Save Warning, Delete Warning, Use Password*.

Figure 27 System Setting

**Save Warning:**

Once checked, every time exiting the software it will come out a *Save Warning* tips. Otherwise, the program will be saved automatically without any warning.

**Delete Warning：**

Once checked, every time operating any delete operation it will come out a confirmation tips. Otherwise, any program will be deleted immediately without any warning.

**Use Password：**

Once checked, password input is needed when entering into *Hardware Setting, Firmware Upgrade and* cancelling password; otherwise, by default, it will be thought as administrator operation without password input.

The default password is168 or 888.

## 7. System Control

It includes *Communication setting, Boot screen, Brightness Adjust, Time correct, Cluster Send, Export to U-disk, Screen Test and Firmware Update* in the *System control*.

1) Communication Setting

Users should bind the *Screen* that has been edited with controllers in the *Communication Setting* interface before sending programs to them.
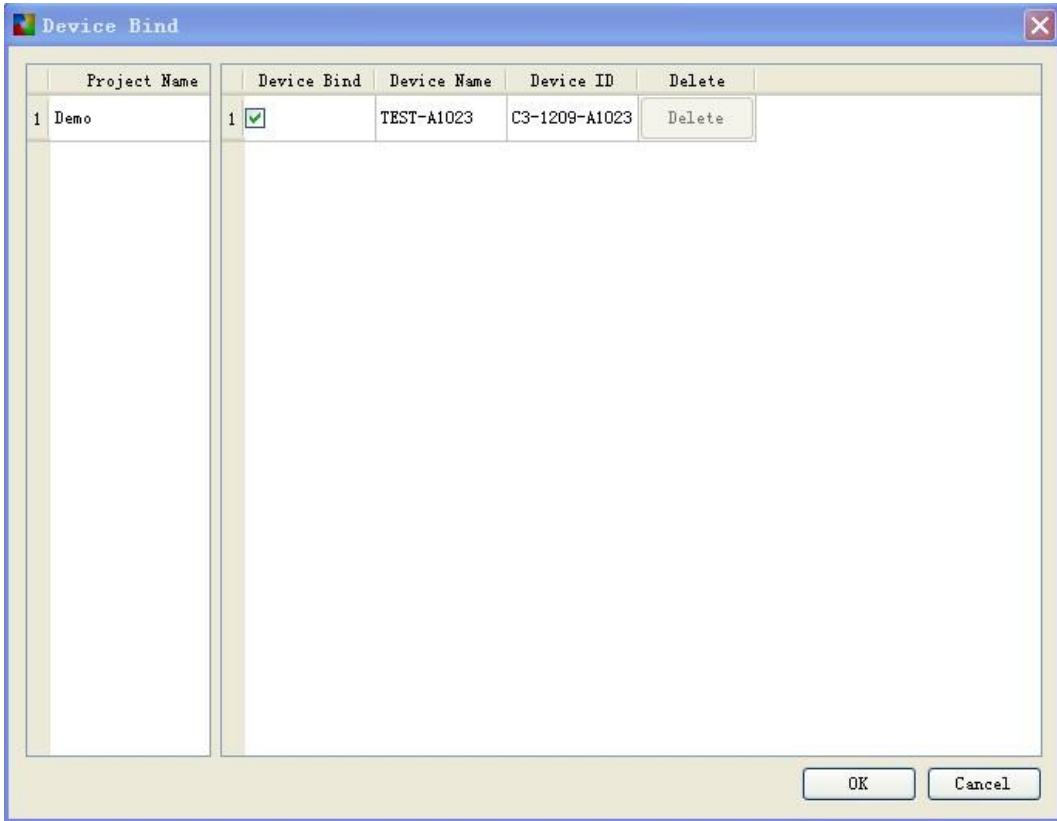
Figure 28 Communication setting

Note: one *Screen* can be connected to several controllers, and several *Screens* can be connected to the same controller also.

2)  Boot Screen

It supports custom boot screen in HD-C3 controller. Users are able to set any picture they like in Boot Screen such as their companies' Logo.
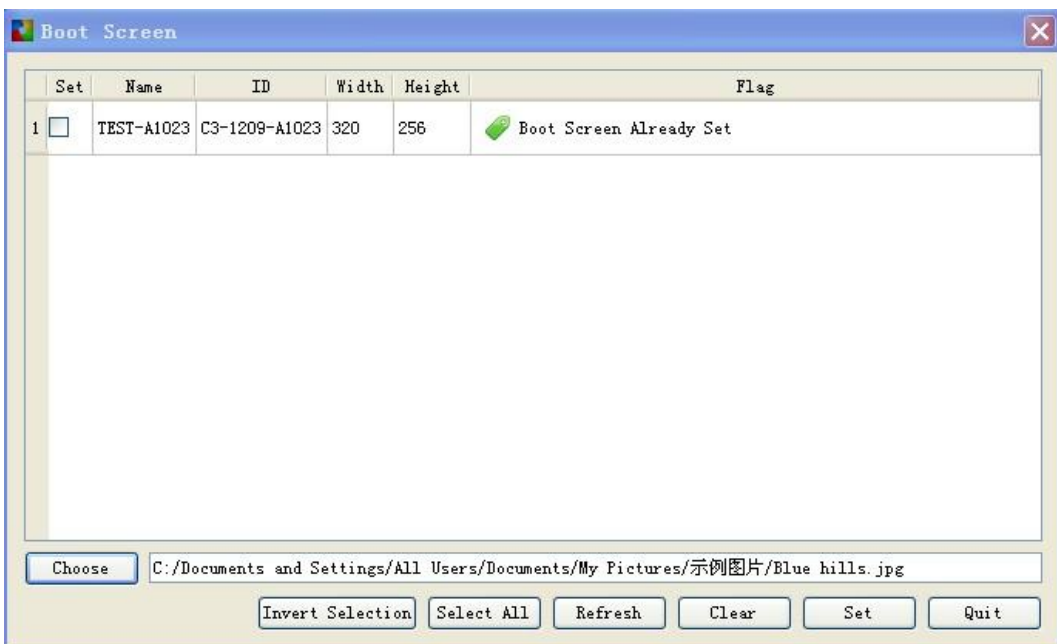
Figure 29 Boot screen

Users can set or delete the boot screen of different controllers at the same time.

3)  Brightness Adjust

Select the controller which users want to adjust the brightness with, then adjust the percentage of it's brightness. Users are able to set the brightness uniformly or different brightness in different time.
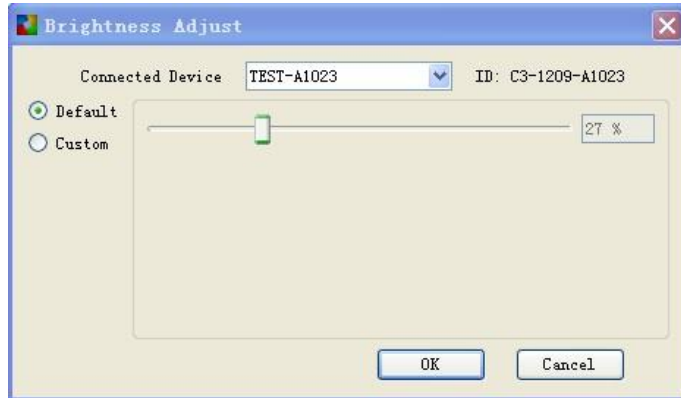


Figure 30 Brightness adjust

Note: This setting is synchronous with the setting in attribute column of the *Screen*.

4)  Time Correct

Select the controller which users want to adjust the time with, then set the Device Time synchronous to the Computer Time or customize the Device Time.



Figure 31 Time adjust

Note: The time zone will be adjusted automatically in the controller without users' any adjustment.

5) Cluster Send

Programs will be sent to all these controllers that have been connected with the *Screen* at same time. When one controller connected to several *Screens*, the newest program will replace the previous program.
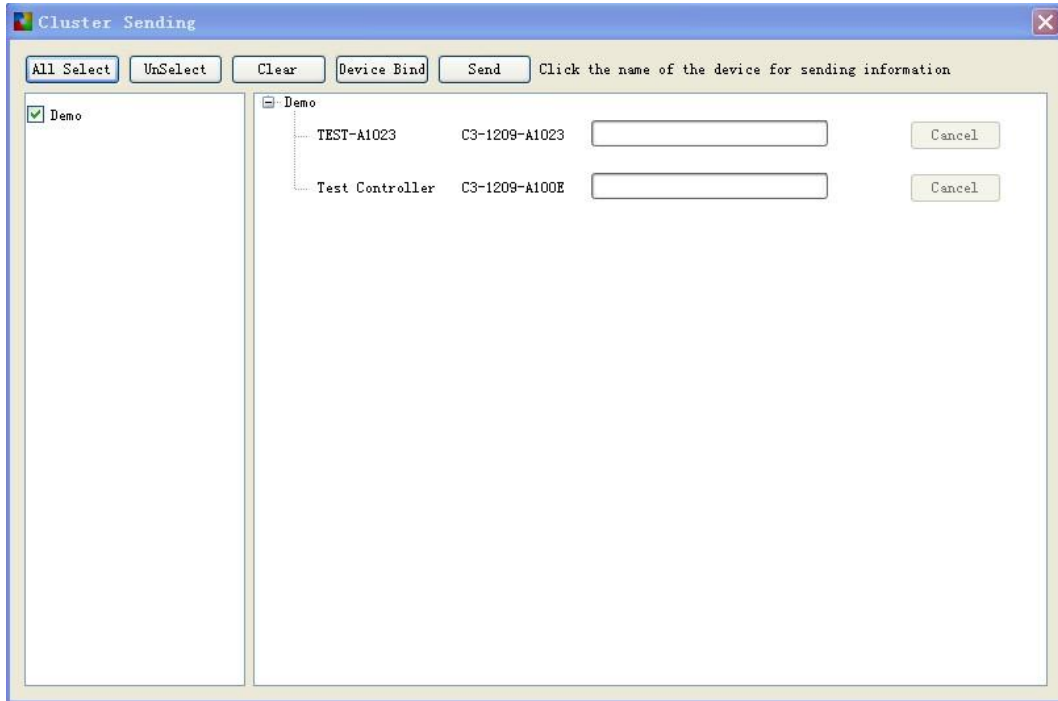


Figure 32 Cluster Send

6) Export to U-disk

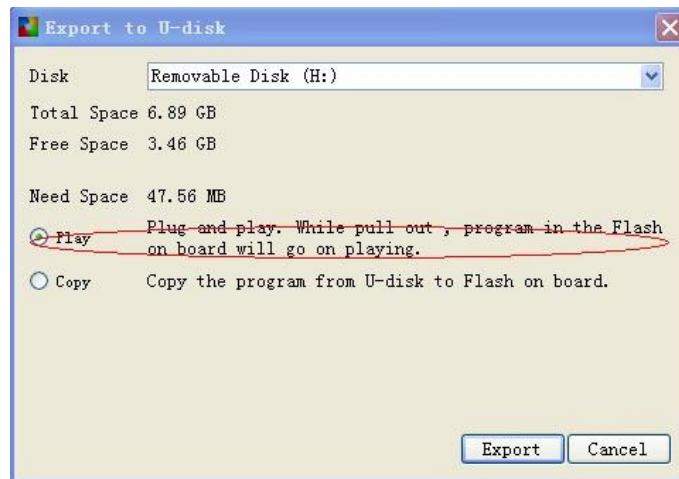Users can use the USB-disk to expand the memory or to upgrade the program in the controller memory.



Figure 33 Export to U-disk

In this way the memory can be expanded infinitely. And the USB extending line within 10 meters can be used when inserting the U-disk to the controller.

7) Screen Test

Users can use the *Gray Test, Color Band, Grid Test and Multi Points Test* to check the light bead of the screen.
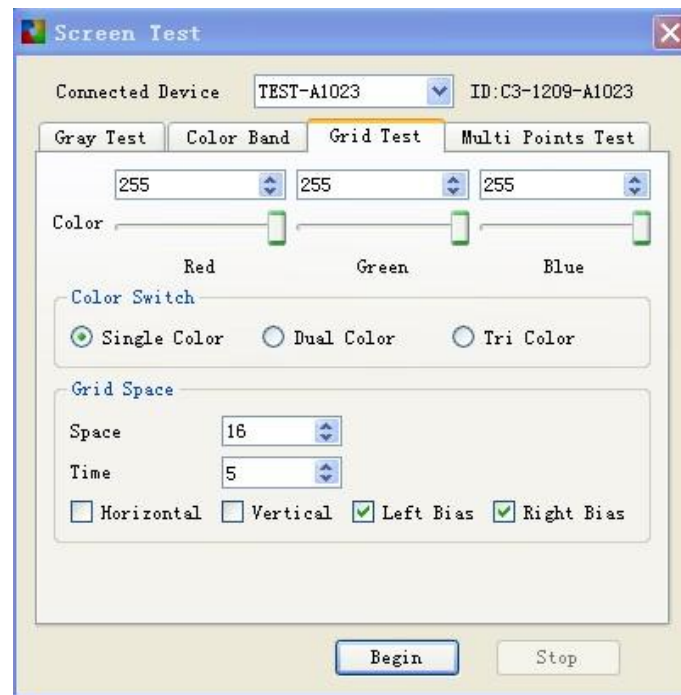


Figure 34 Screen Test

Users can enter the software interface or press the Key (SW1) on the controller board to start *Screen Test* .

8) Firmware Update

It is able to uniformly upgrade all controllers that have already connected to the computer. Add the newest firmware, check its' version and press *Upgrade* button to upgrade.

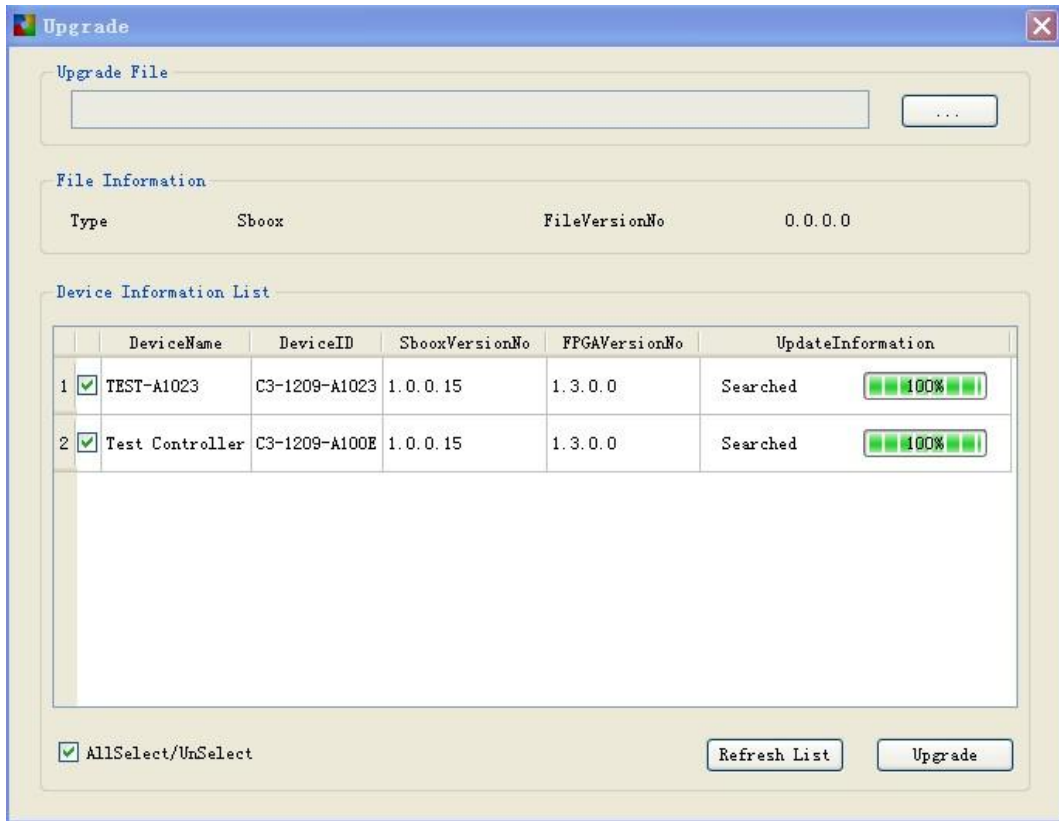The whole process is run by software background completely. Once pop-up *Upgrade successfully*, the new firmware version displays and the controller begins to work normally.

Figure 35 Firmware Upgrade