WINSTAR

M Series

User Guide

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Chapter 1. Description

This user guild is introduce how to use M-Series by Clever System User API and Firmware update. This way will help you to setup your HMI in short time.

Chapter 2. Hardware

There are four resolution which are 3.5”(320*240)、4.3”(480*272)、5.7”(320*240)、7”(TN , 800*480) and 7”(IPS, 1024*600) for M serial. The module with "UART" and "SPI" interface, dimming control by PWM and 4 switched I/O pins.

2-1 Communication Interface

There are 2 communication interface available in M serial, one is UART and the other is SPI map to CON2 and CON3 (Fig 2-1). You can have your own HMI by the command set which include text display、picture display、drawing geometry、dimming control…. The detail information please check the chapter 2 Commands Reference Guide.



Fig 2-1 M serial module front view

2-2 Clever System User API connection setup

M serial can communication with your PC go through COM port, 3.5”、4.3”、5.7” need transfer board (WWTFT-10#) as bridge to PC, but not the 7” M-Series which build in the transfer board circuit. You need provide 5V/1.5A power to CON1-pin12 of the module 7”(IPS, 1024*600) and the Mini USB/Micro USB for data communication only. 7”(TN , 800*480) can get the power from USB port directly.

Set jumper of WWTFT-10# before connect with 3.5”、4.3”、5.7” model, please see Fig 2-1. After jumper is set, connect the JP3(pin1~pin7)of WWTFT-10# with CON2(pin1~pin7) of M-Series module start to use clever system user API.

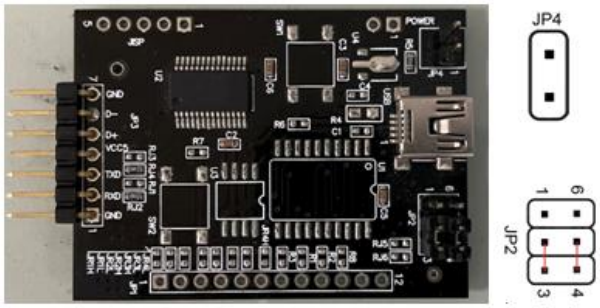


Fig 2-1. WWTFT-10#

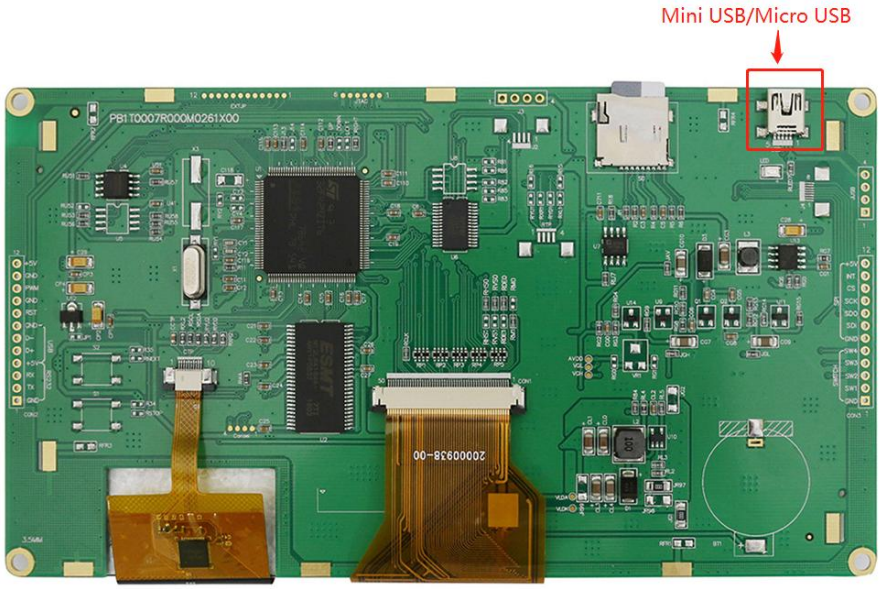


Fig 2-2. M-series 7-inch back

Chapter 3. Clever System User API (Winstar.exe)

3-1 Clever System User API interface

Winstar.exe is a User API which can support customers to build their own display, For example, you want show “Windstar” on (100, 100) then you will get command codes from block ”Transmission Instruction for RS232/SPI” and implement to your code. You can write your picture and font data to flash by using Winsatr.exe.

The function buttons were listed below:

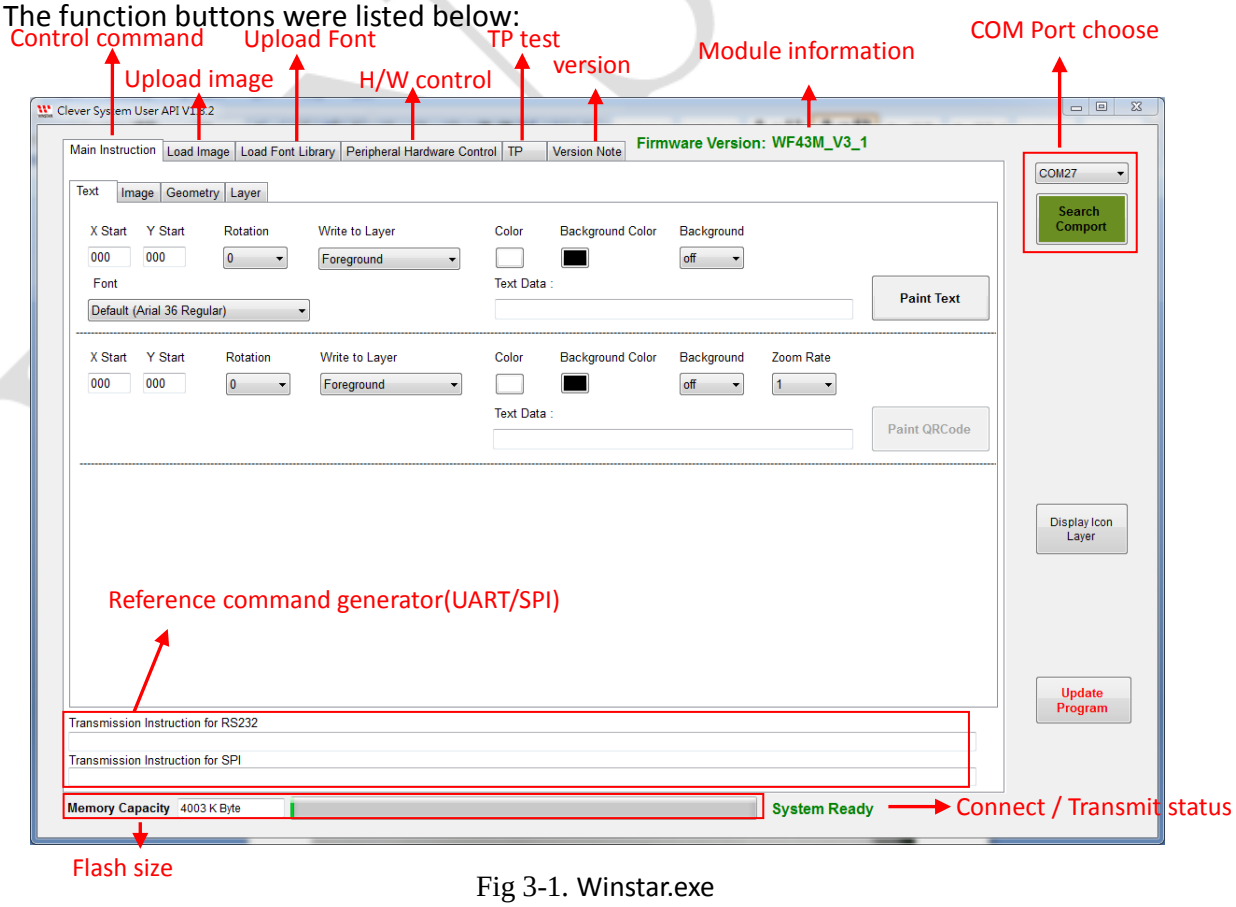


Fig 3-1. Winstar.exe

3-2 COM Port selection

You should get COM port address in device management first, then you can run Winstar.exe.

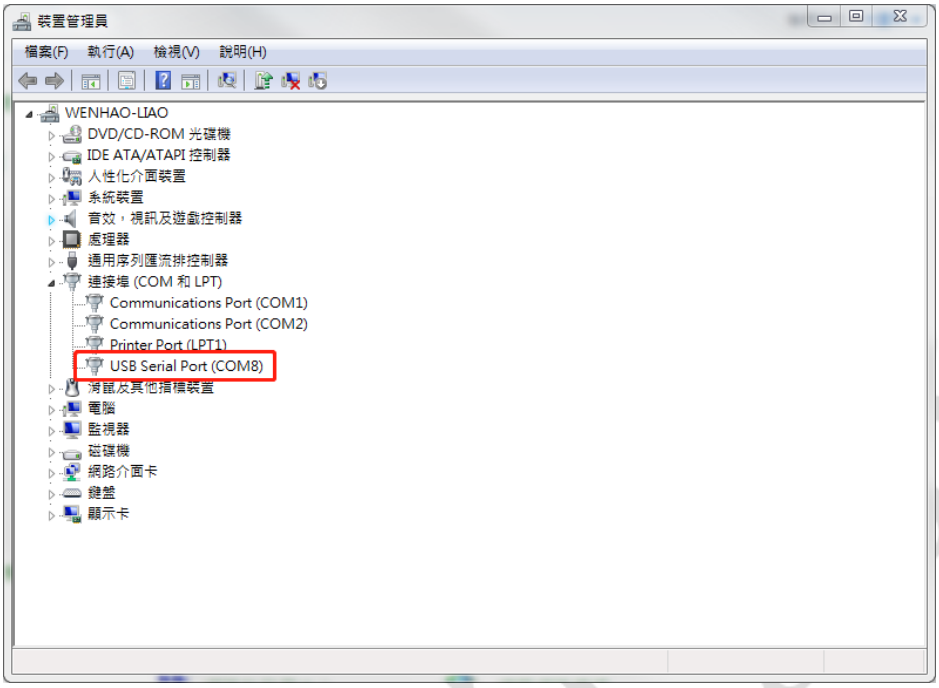


Fig 3-2. device management

Please kick “Search Comport” to update the device info, then choose your device from COM Port List. You will know the free size of the flash when you link to M-serial. If you can’t link to the module, please close Winstar.exe and then execute it again.

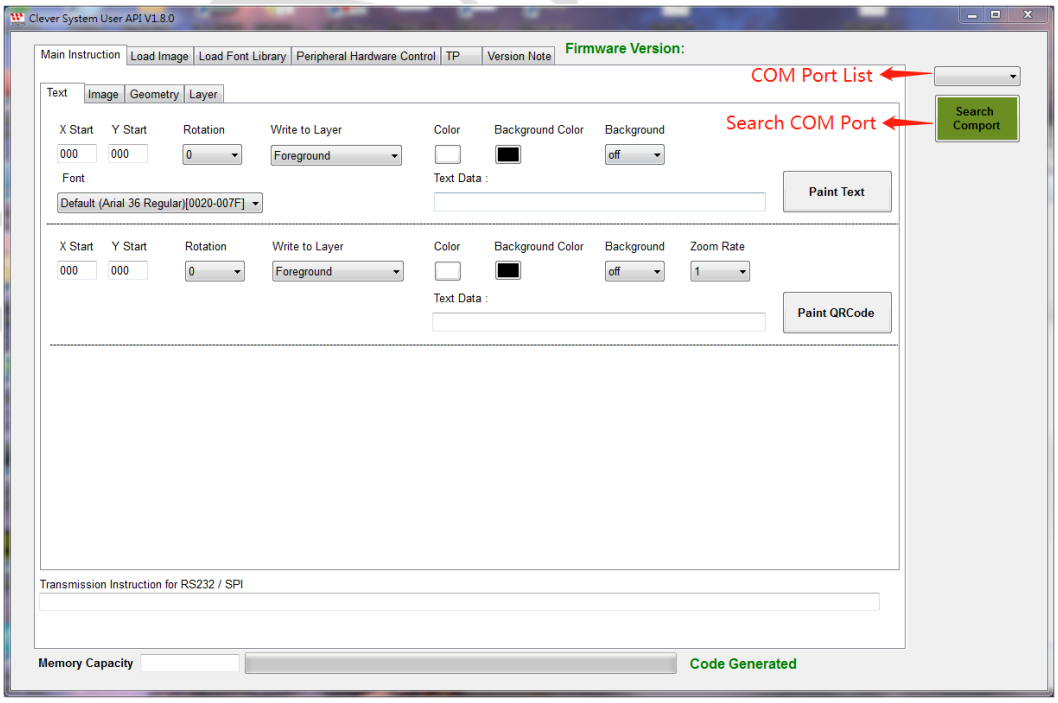


Fig 3-3. Winstar.exe connect screen

3-3 Main Instruction

There are four main functions which are “Test” 、”Image” 、”Geometry” 、”Layer” you can simulate and then you can have the image on the TFT. We will introduce the functions below:

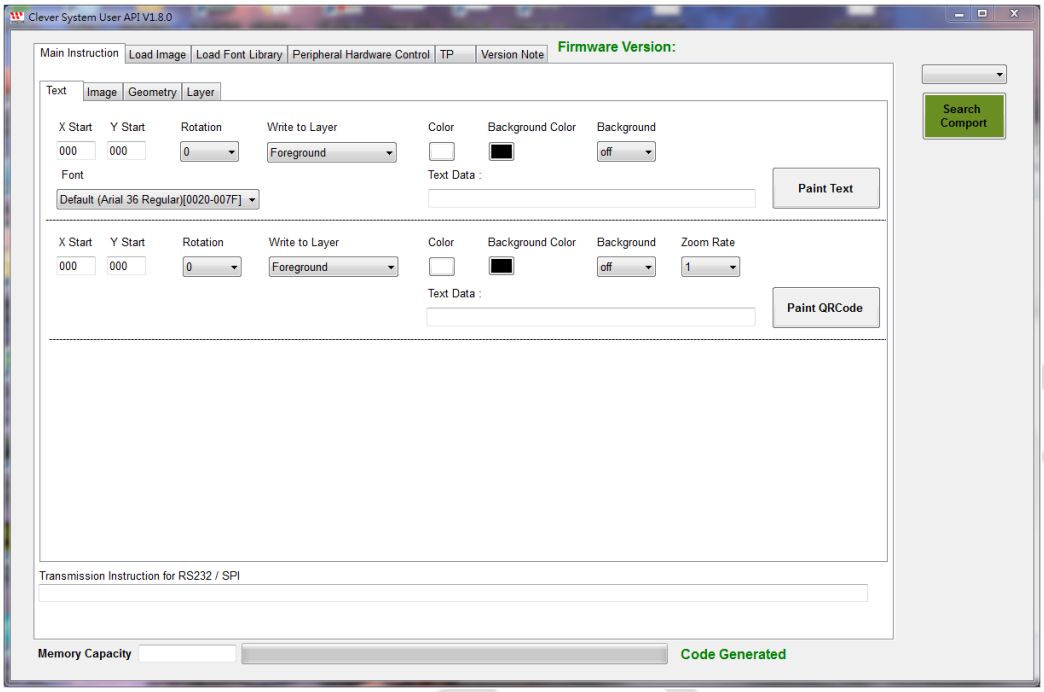


Fig 3-4. Winstar.exe Main Instruction

3-3-1 Text

In the function which include 2 command “Paint Text” and “Paint QR code” .You can define 1. X-Y coordinate 、2. Display Layer 、3. Font(size color…) .

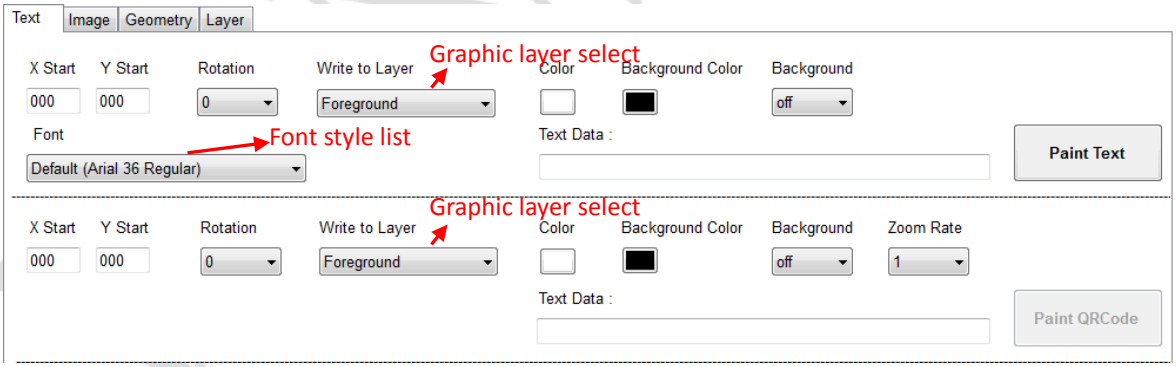


Fig 3-5. Text

- Paint Text：

  Support “Unicode” font library. You can choose the font Which you need download the font from http://edu1.wordpedia.com/wptoolkit/unicode.htm then upload it to the Flash(detail 3-5 Load Font Library) .

- Paint QR code：

  QR code generator, it transfer ” text”、 “number” and “website”… into QR code image. This function is only supported in the module 7”(IPS, 1024*600).

3-3-2 Image

You can upload the image from the flash to display on TFT panel and set up “X-Y coordinate” 、”rotation”、and “display layer”.

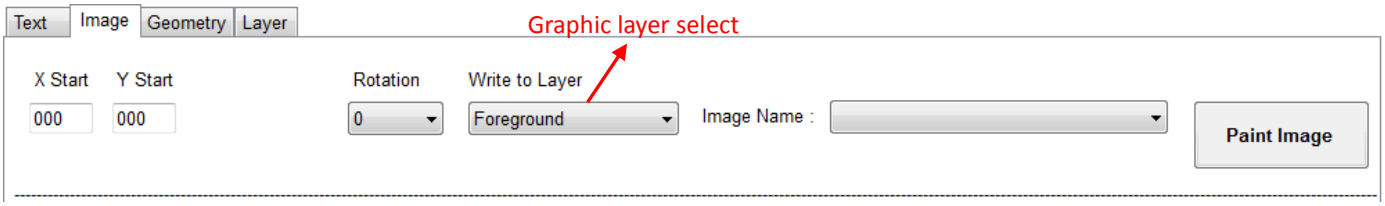


Fig 3-6. Image

- Paint Image：You can display the picture from Flash.

3-3-3 Geometry

In Geometry mode, you can draw a point、line、square、circle(7” IPS available)、ellipse(7” IPS available) and the detail parameters list below. For example：if you want to fill in the color in square by setting the dot size which is bigger the painting color is more in otherwise smaller you get the edge color.

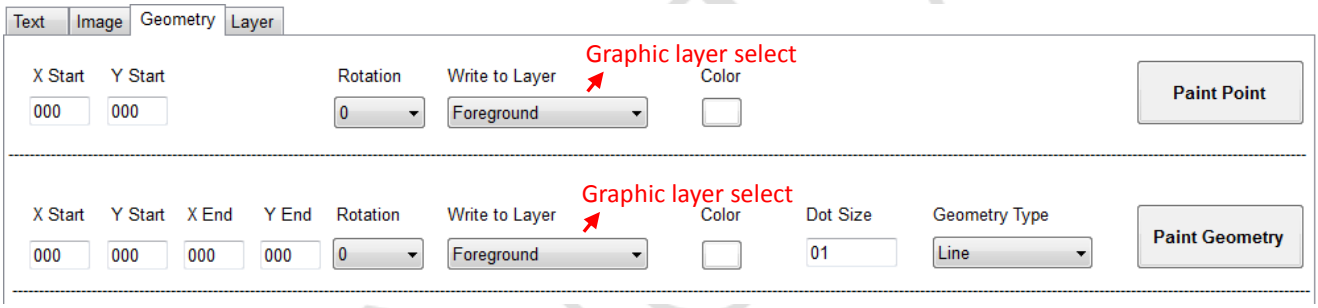


Fig 3-7. Geometry

3-3-4 Layer

There are 2 commands which are “Clean Block” and “paint Layer” in this function. You can fill “X-Y start”、”X-Y end” to scope the operation filed, please check the “Fig 3-8 Layer”.

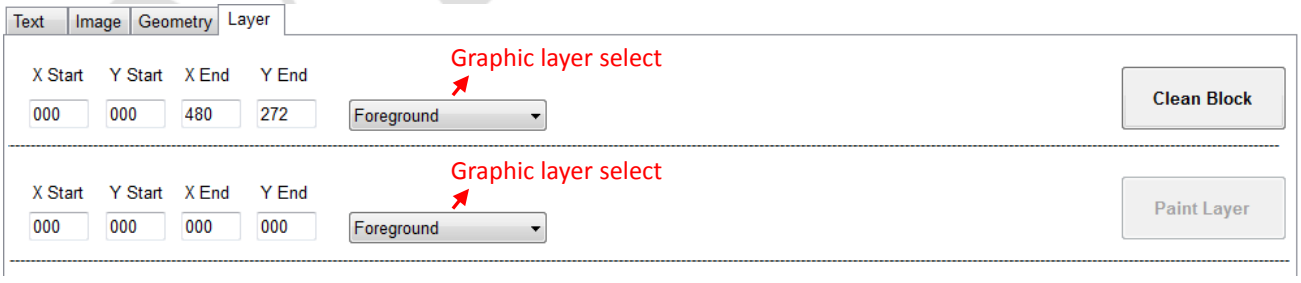


Fig 3-8. Layer

- Clean Block, You can clean the layer that you want.
- Paint Layer, Assign the scope of Virtual Layer map to layer which you want to show. This function is only supported in the module 7”(IPS, 1024*600).

3-4 Load Image

You can upload your picture (a picture or many pictures one time) into flash. **The 7" panel (TN, 800*480) does not support this function**. It displays the image by reading the SD card. Please refer to **section 3-4-3** to learn how to display the image in the SD card.

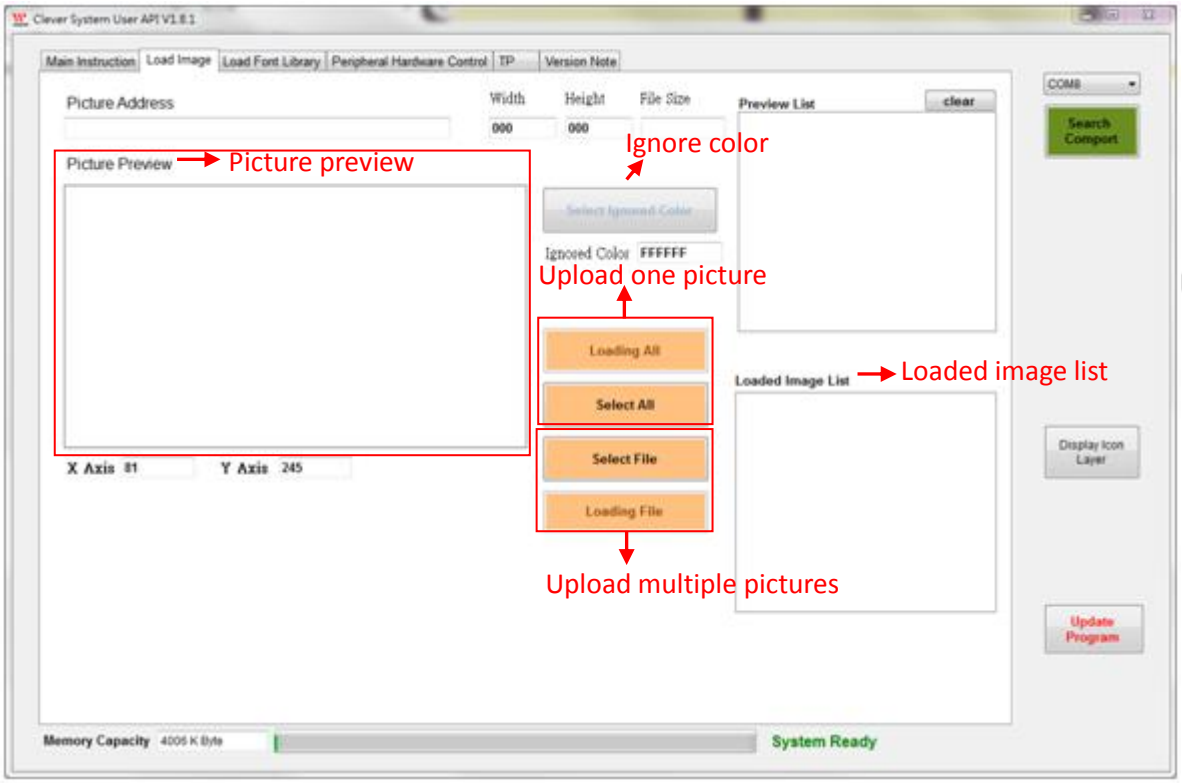


Fig 3-9. Load Image

3-4-1 Upload one picture

Operation follow：

1. • click "Load Image" Tab
2. • **Select File**
3. • Choose one picture
4. • Open file
5. • **click "Loading File"**
6. • waiting for upload to Flash

Fig 3-10. Upload one picture steps

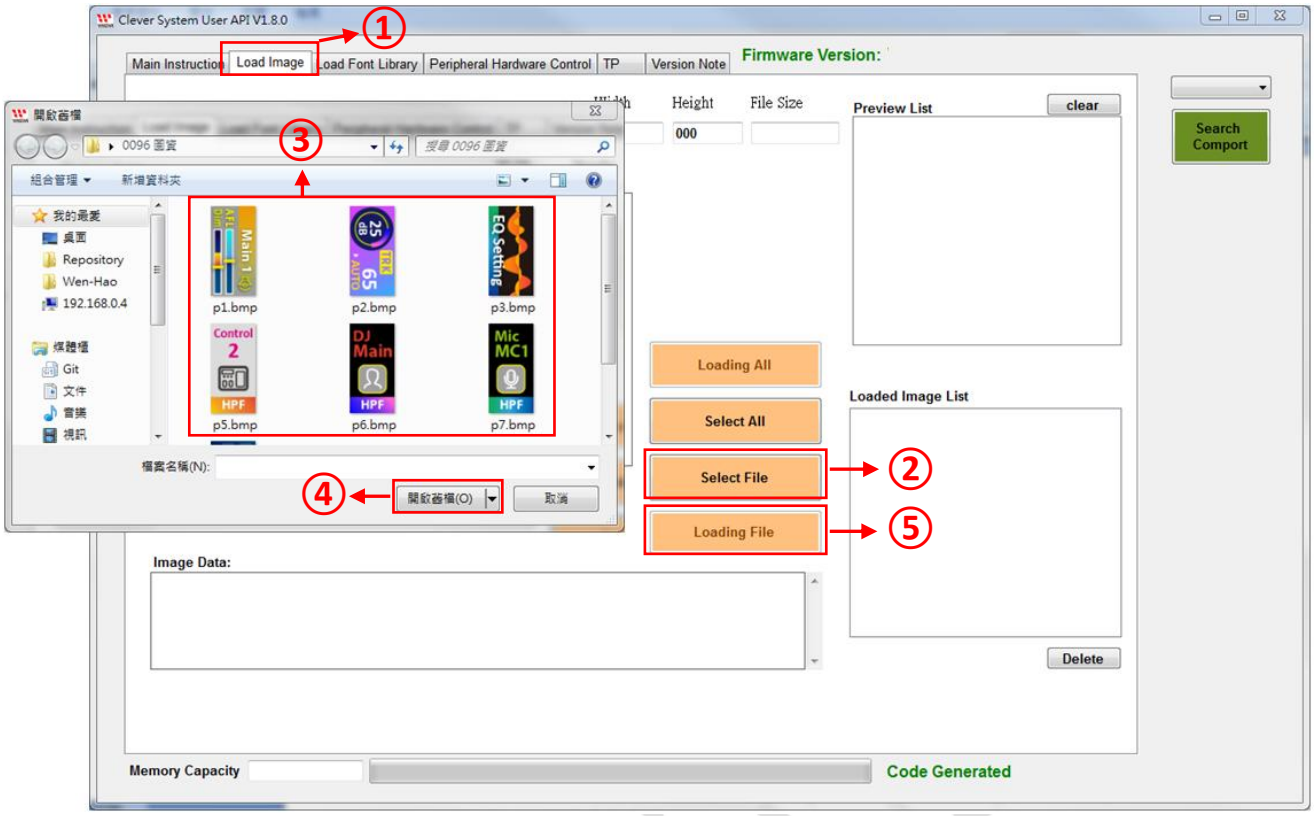


Fig 3-11. Upload one picture steps

3-4-2 Upload multiple pictures

Operation follow：

1. click "Load Image" Tab
2. **click "Select All"**
3. choose the file
4. click "OK"
5. **click "Loading All"**
6. waiting upload pictures to Flash

Fig 3-12. Upload multiple pictures steps

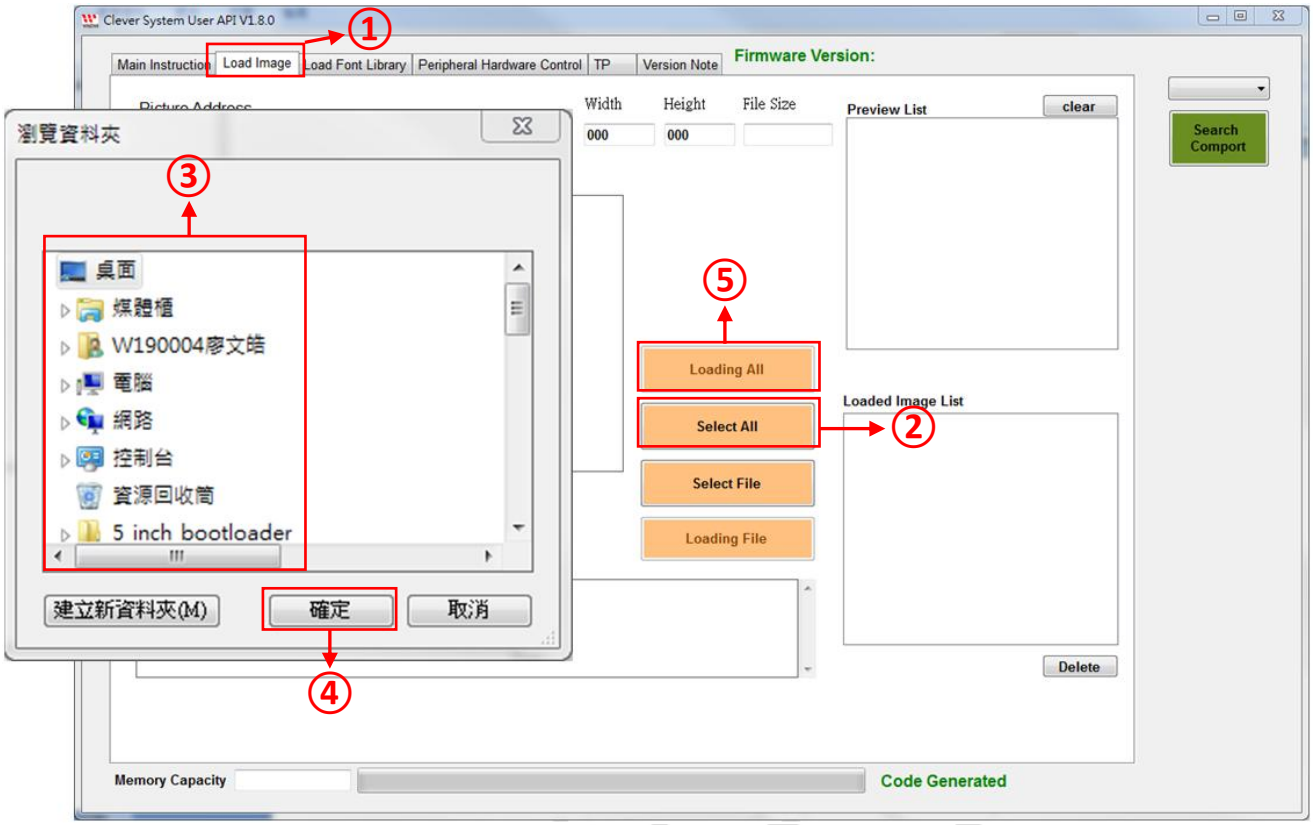


Fig 3-13. Upload many picture steps

3-4-3 Loading Image from SD card (For 7" panel (TN, 800*480) only)

Operation follow：

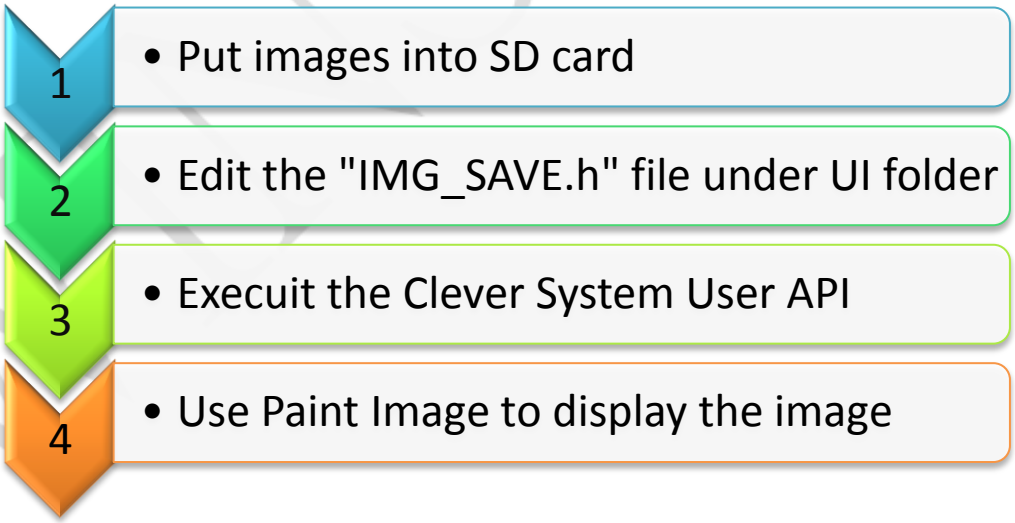


Fig 3-14. Loading Image from SD card steps

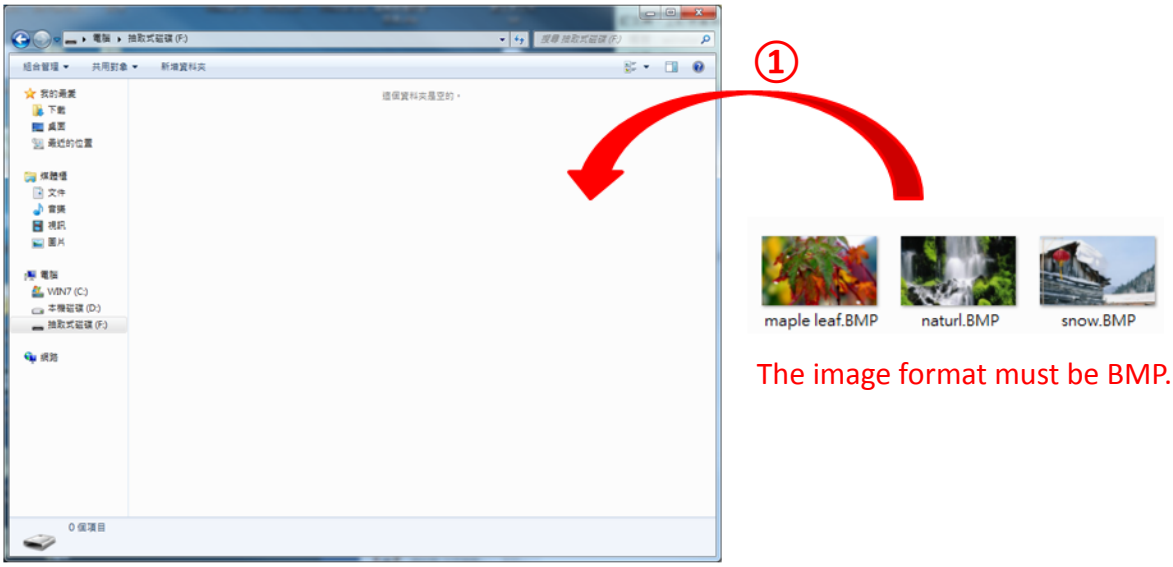


Fig 3-15. Put image into SD card.

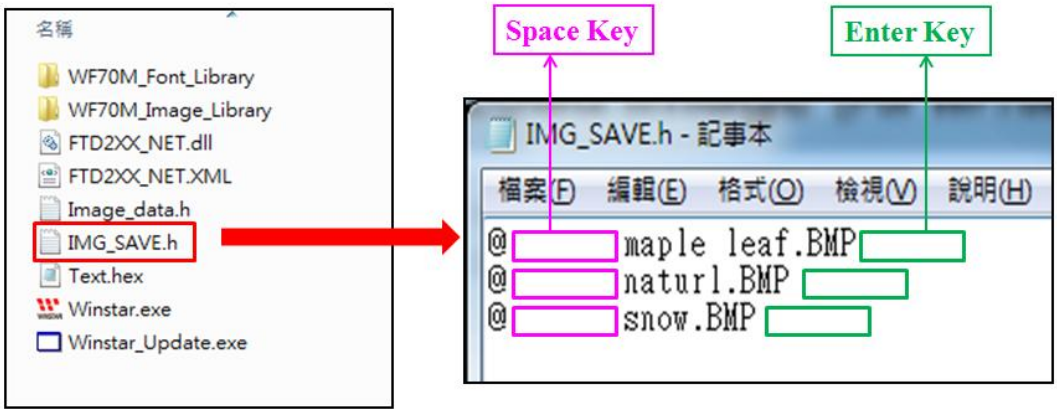


Fig 3-16. Edit the “IMG_SAVE.h” file

3-5 Load Font Library

You can choose the font style which you want, then you can write it into the Flash. Please check below steps：

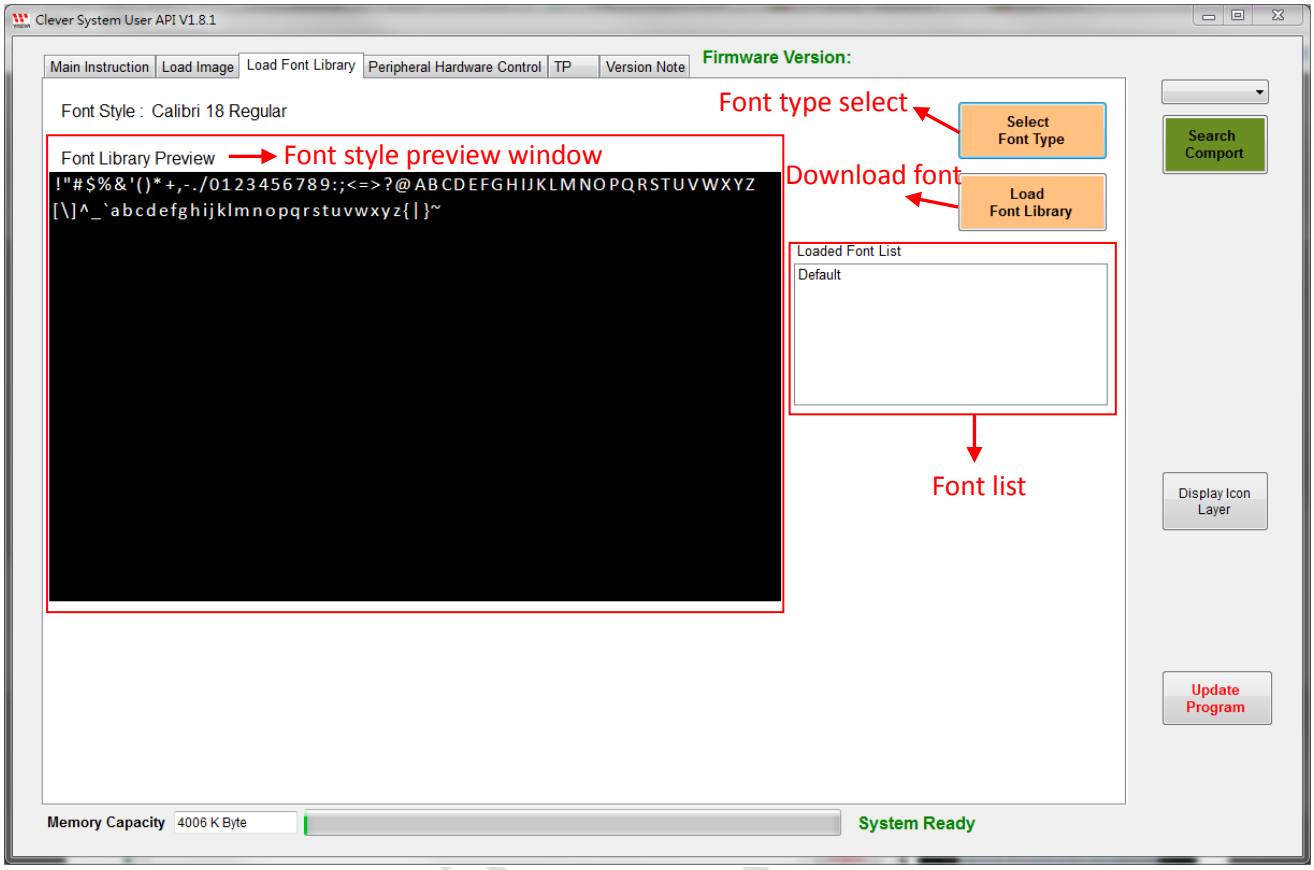


Fig 3-16. Load Font Library

3-5-1 Download Unicode font

Download follow：

1. click "Load Font Library" tab
2. choose"Select Font Type"
3. selecte "Font"
4. click"OK"
5. click"Load Unicode Font Library"
6. waiting upload pictures to Flash

Fig 3-17. Download Unicode follow

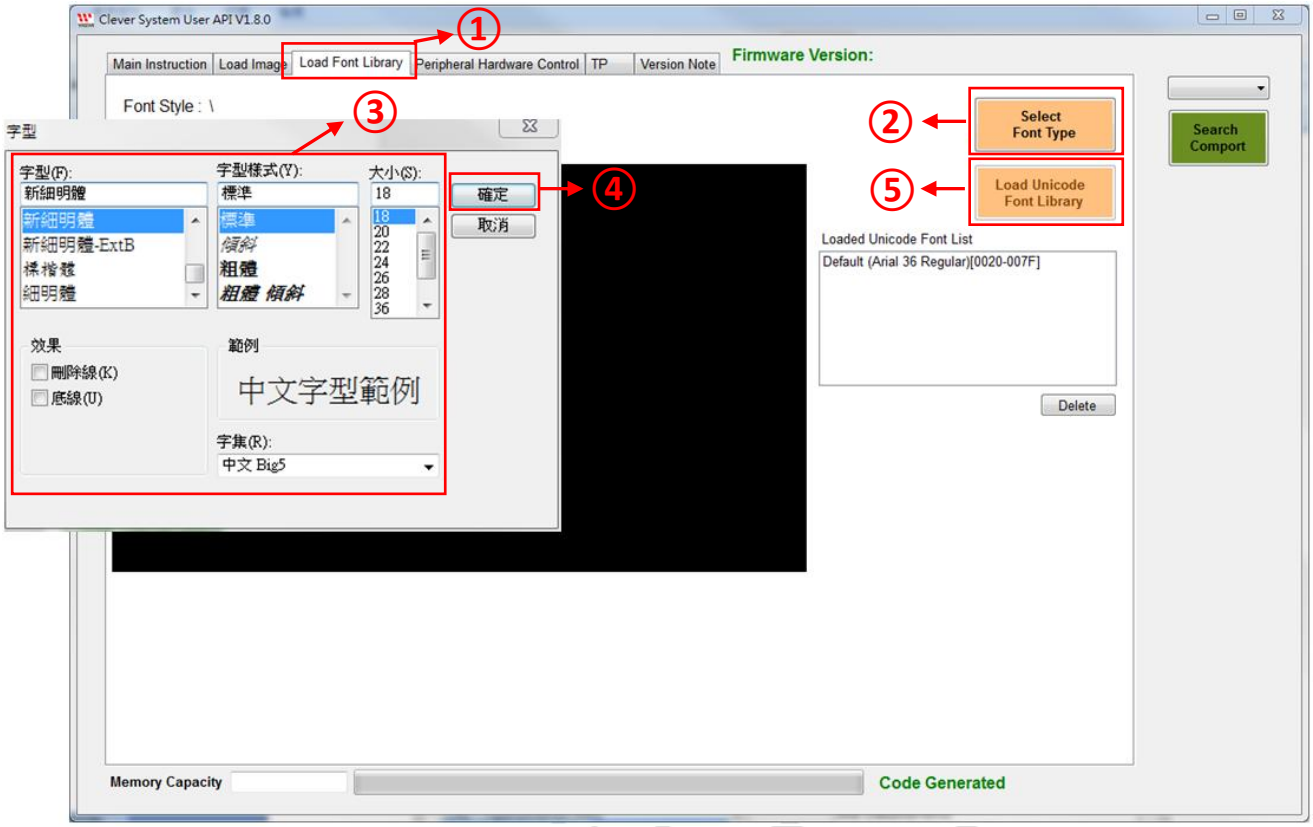


Fig 3-18. Unicode font setting

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3-6 Peripheral Hardware Control

There are functions which are “Sleep Mode”、”PWM Output”、”Dimming Control”、” RTP Calibration “ and “Erase Flash “ in Peripheral Hardware Control tab.

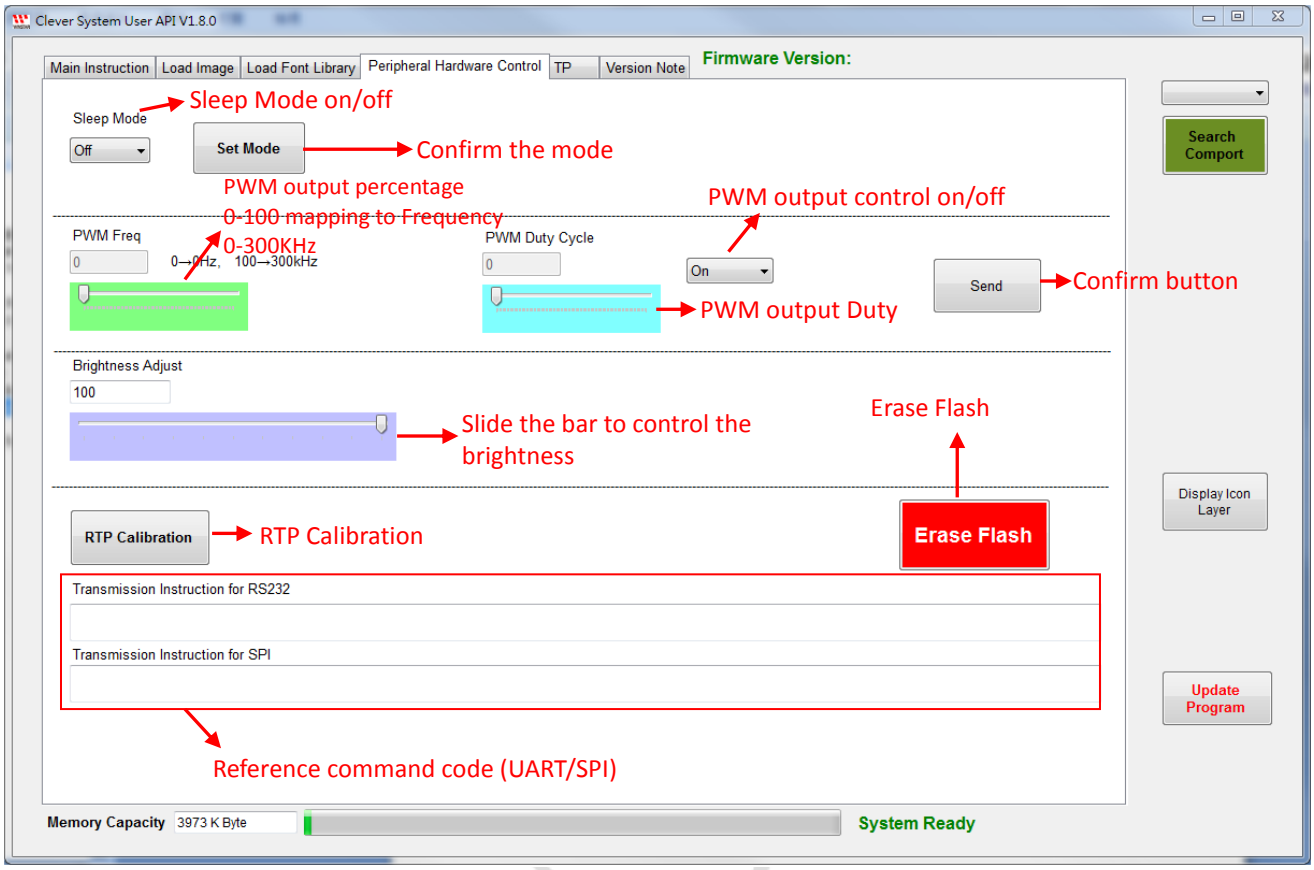


Fig 3-22. Hardware control

3-7 Touch Panel Test (TP)

There is RTP function in M serial, you can test RTP function in TP tab. When you touch the RTP then the touch point will map to X-Y coordinate on “picture Preview” as red point.

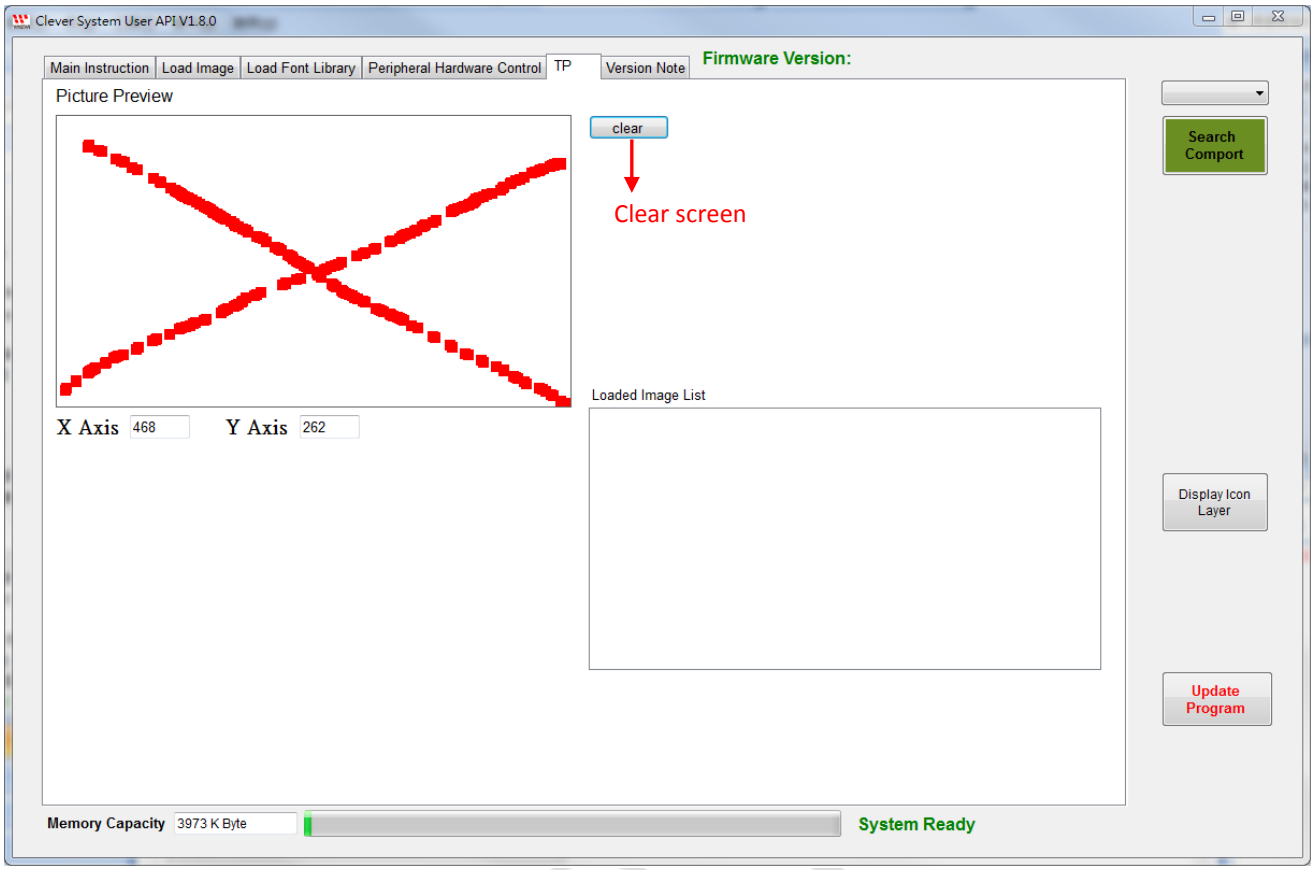


Fig 3-23. Touch panel test

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Chapter 4. Firmware Update

Firmware update is available in M-serial, you need to use transfer board(WWTFT-10#) work with Winstar.exe to update firmware in 3.5”、4.3”、5.7”.In 7”, you can use USB cable to update firmware by Flash Loader Demonstrator.

4-1 3.5”, 4.3”and 5.7”

When you need to update the firmware, there are 2 hardware steps to do.

1. Change Jumper on WWTFT-10#, short JP2 pin1 & pin2, short pin5 & pin6, short JP4. Please check Fig 4-1.
2. JP3(pin1~pin7)of WWTFT-10# connects with CON2(pin1~pin7) of M-Series module.

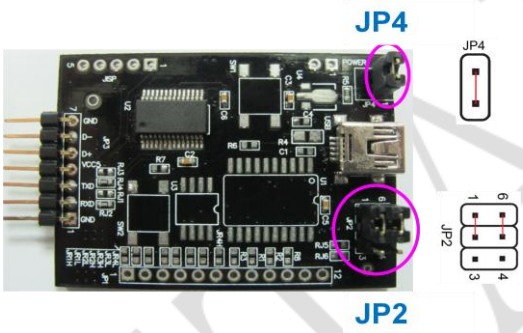
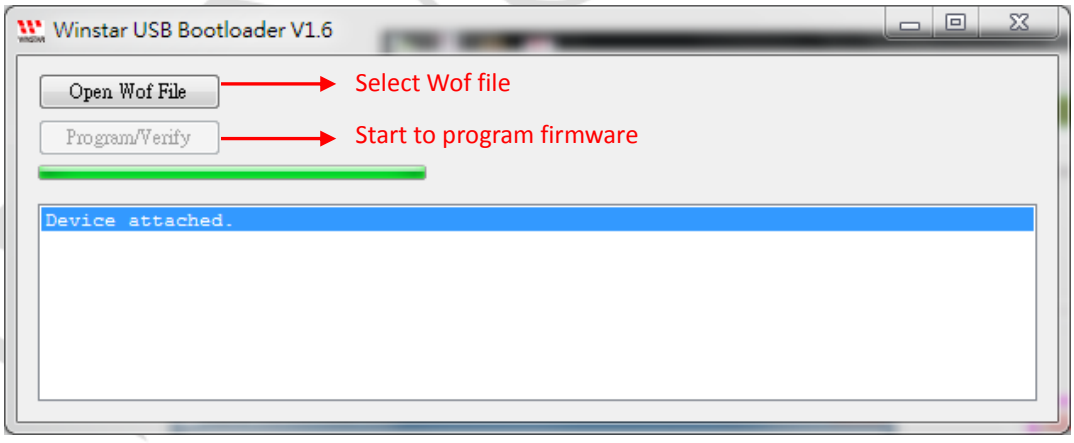


Fig 4-1. WWTFT-10#

Execute Clever System User API, select “Update Program” to open USB bootloader V1.6.exe. And select the Wof File to update firmware. After the program firmware is completed, change back JP2 & JP4 to the original position then able to restart the module and clever system kit.



4-2 7”(TN, 800*480)

When you need to update the firmware, there are 3 hardware steps to do.

1. Move 0R out on J13.
2. Put 0R on J14.
3. Short the EXTJP pin3 to GND, please check “Fig4-1” and “Fig4-2”.

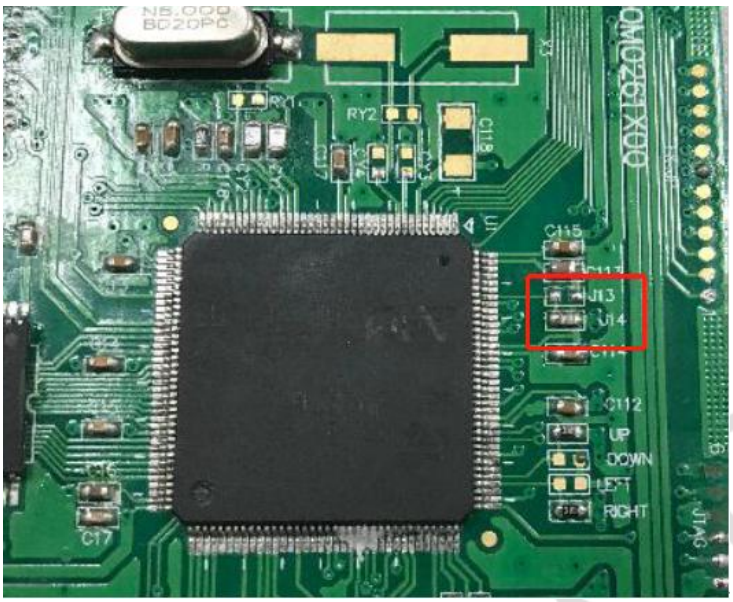


Fig 4-1. J13 OPEN, J14 0R



Fig 4-2. EXTJP pin3 short to GND

Normal mode, undo the 3 steps above.

In F/W update mode, you can use mini / mirco USB link to PC then open Demonstrator GUI(Flash loader)(download web site https://www.st.com/en/development-tools/flasher-stm32.html), detail setup steps were show below .There are 2 parts need to setup：1. Baud rate: 115200. 2. Port name: please check the device management to get the right name.

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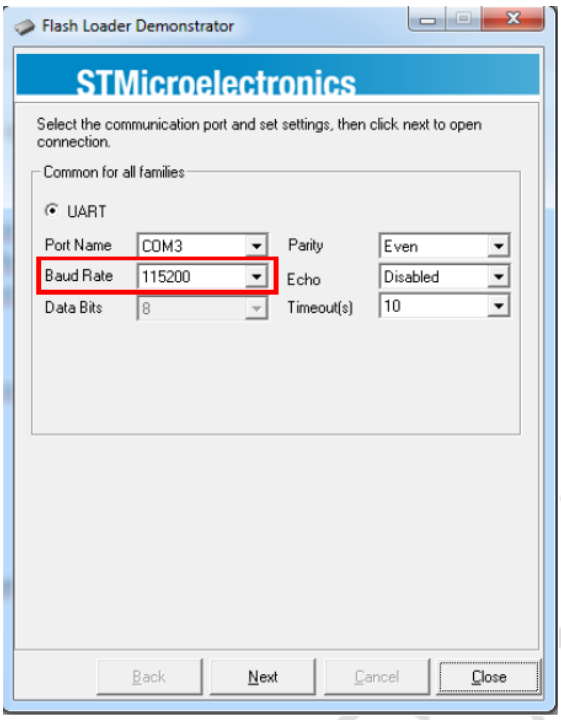


Fig 4-3. Demonstrator GUI(Flash loader)

When you finish 2 set-up please click the “Next” then choose the “Download to device” and assign path of the “.hex file”. The last step is click the “Next” to write the date to flash when F/W update is finished, H/W setup should be settled back to “Normal mode”.

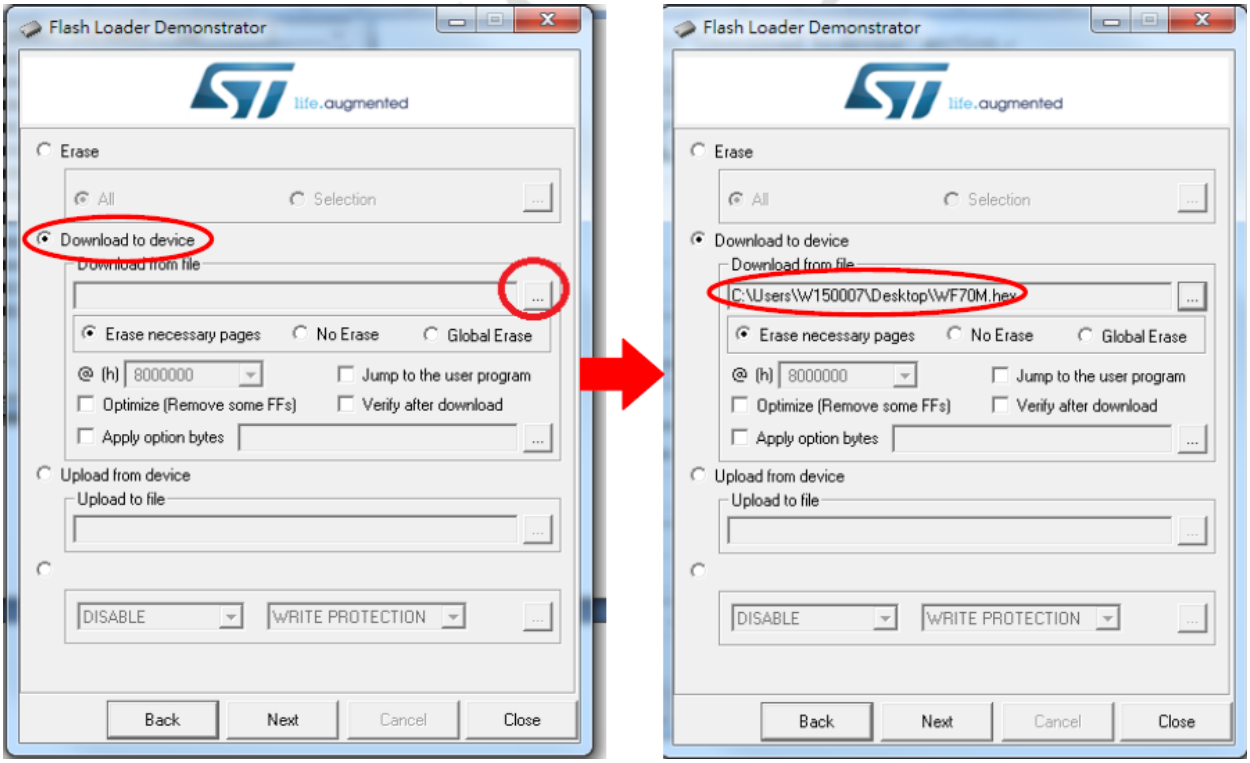


Fig 4-4. Load file

4-3 7”(IPS, 1024*600)

Entry the F/W update mode, put jumper on pin1、pin2 which show below：

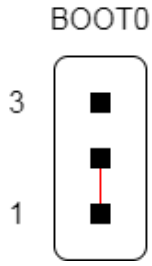


Fig 4-4. BOOT0 setup

Normal Mode：jumper on pin2、pin3

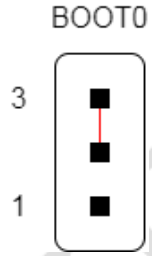


Fig 4-5. BOOT0 setup

In F/W update mode, you can use mini / mirco USB link to PC then open Demonstrator GUI(Flash loader)(download web site https://www.st.com/en/development-tools/flasher-stm32.html), detail setup steps were show below .There are 2 parts need to setup：1. Baud rate: 115200. 2. Port name: please check the device management to get the right name.

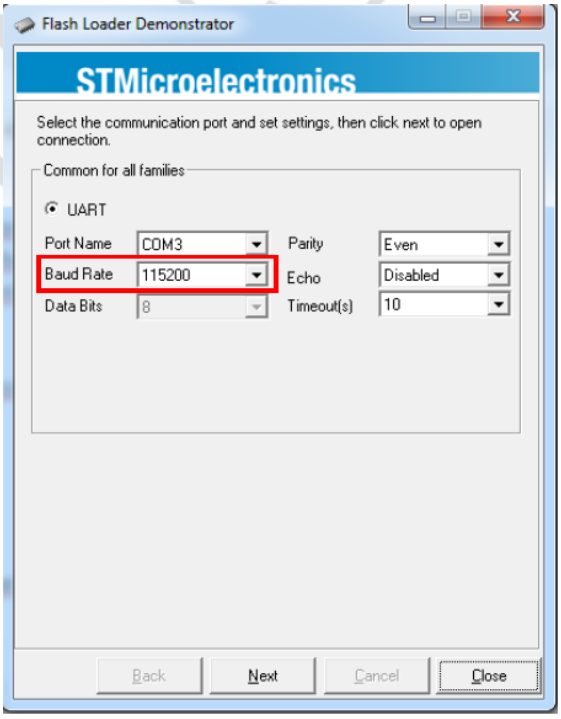


Fig 4-6. Demonstrator GUI(Flash loader)

When you finish 2 set-up please click the “Next” then choose the “Download to device” and assign path of the “.hex file”. The last step is click the “Next” to write the date to flash when F/W update is finished, H/W setup should be settled back to “Normal mode”.

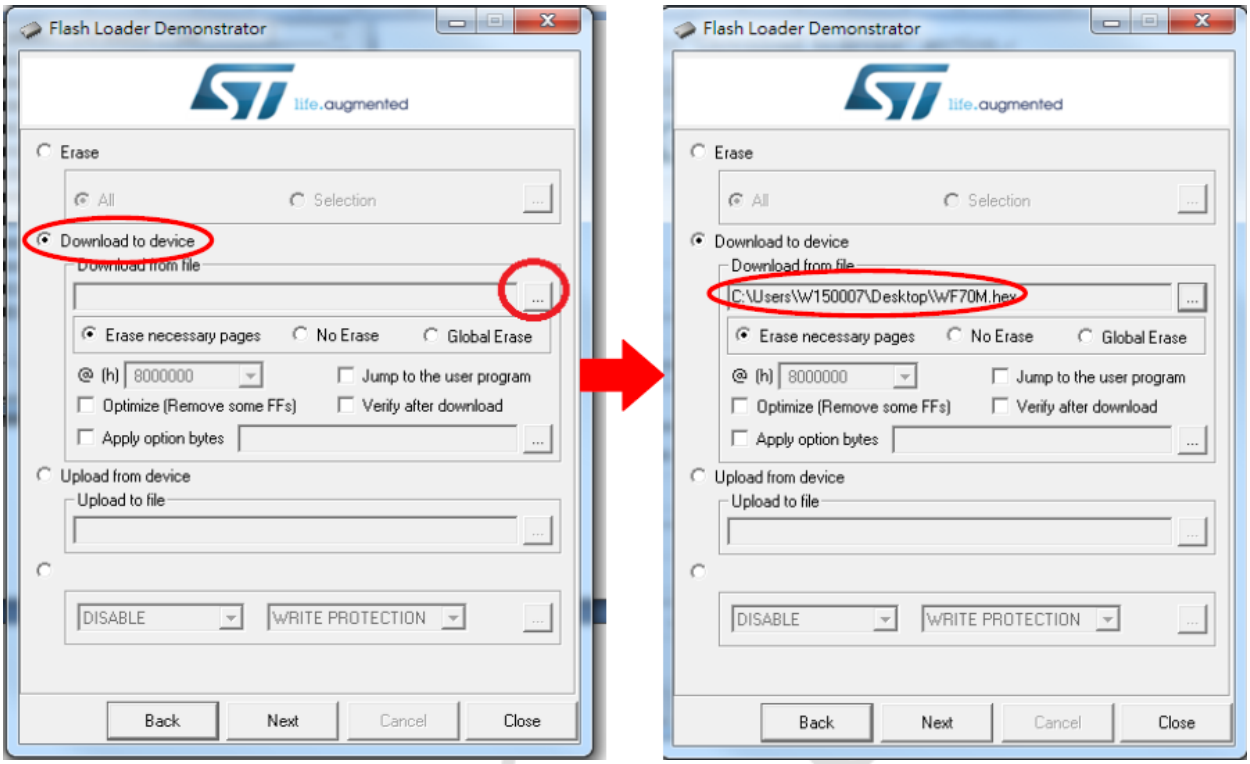


Fig 4-7. Load file

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Chapter 5. Version Information

Date	Page	Contents
2020/12		First released
2021/03	Page 9-10	Add description of loading image from SD card

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