

Ink Screen Font Library Tutorial

From Waveshare Wiki

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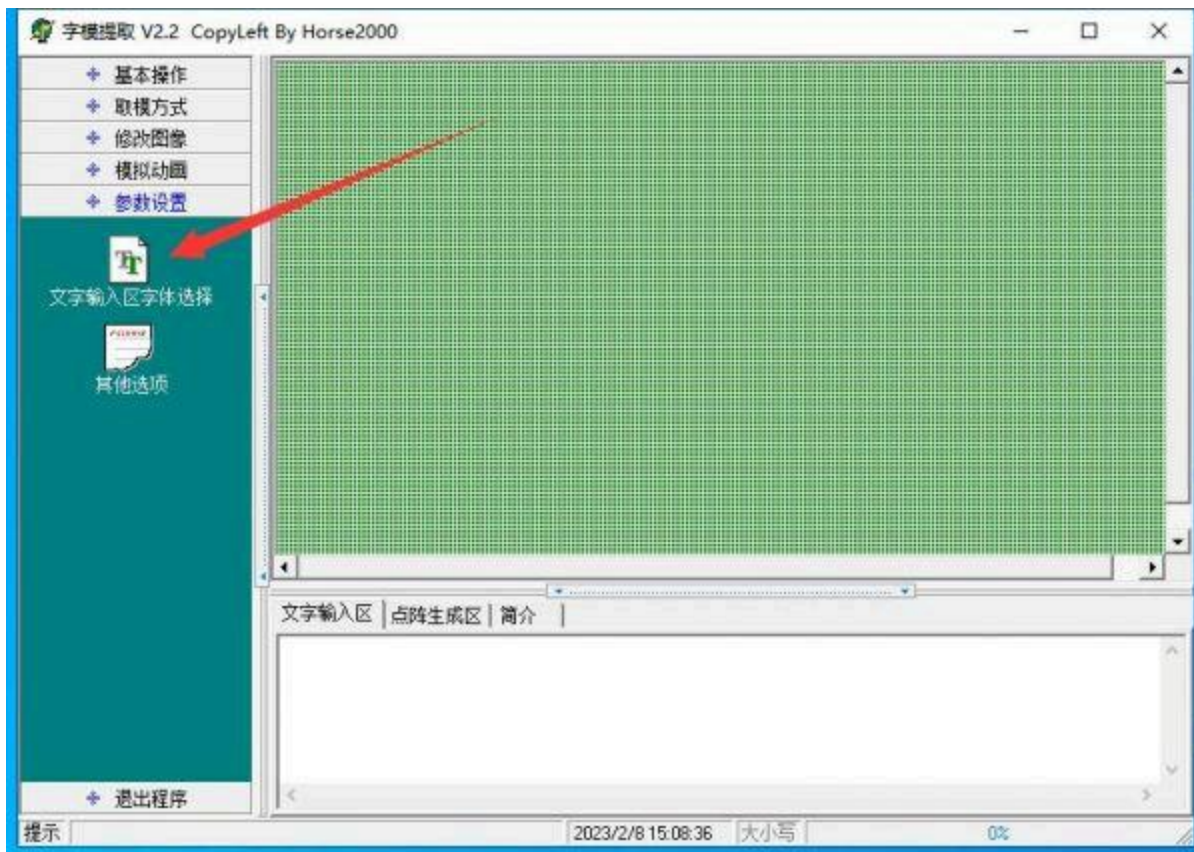
The following are examples of Chinese characters. We take the Raspberry Pi demo with a 2.13 V3 ink screen as an explanation, and other demos/fonts are similar.

Add the Chinese Font Library

Here is an example of adding font24CN.c.

Open the Zimo221.7z (<https://files.waveshare.com/upload/c/c6/Zimo221.7z>) software and follow the steps below to configure the software.

Choose "Font selection for the text area."



(/wiki/File:Ink_Screen_Font_Library_Tutorial01.jpg)

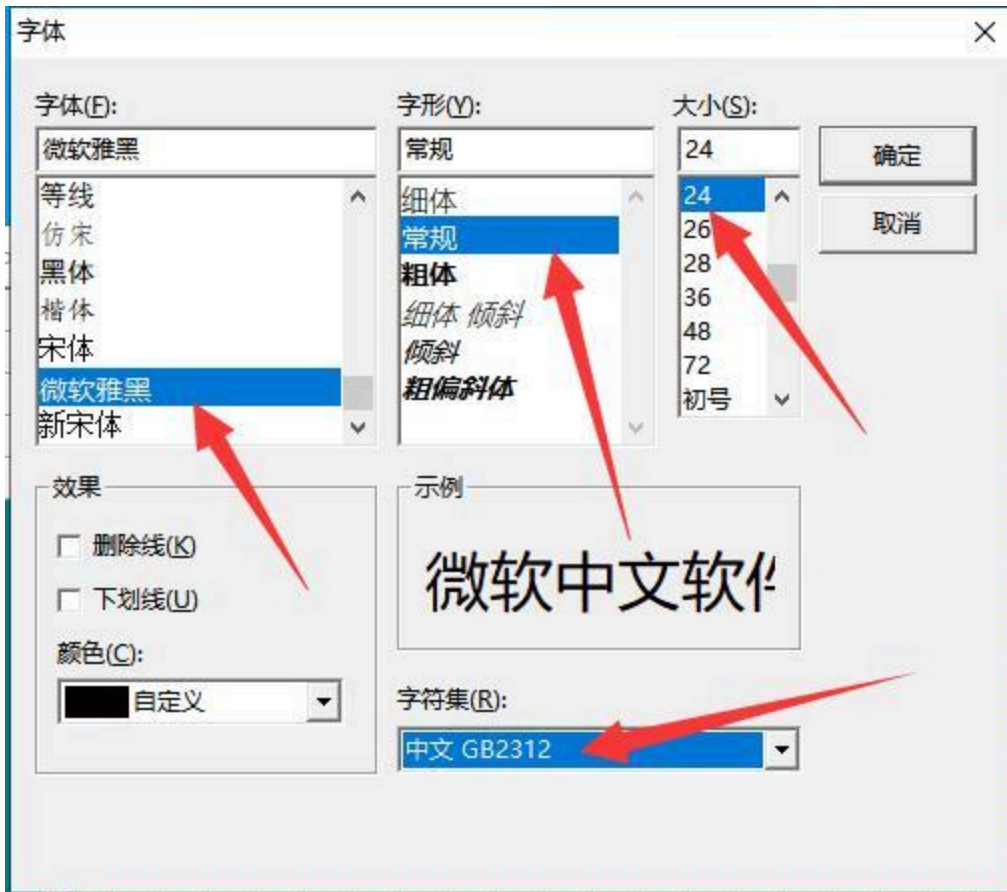
Please select the corresponding font type according to the picture, and click "OK" after completing the configuration.

Font: Microsoft YaHei

Style: Regular

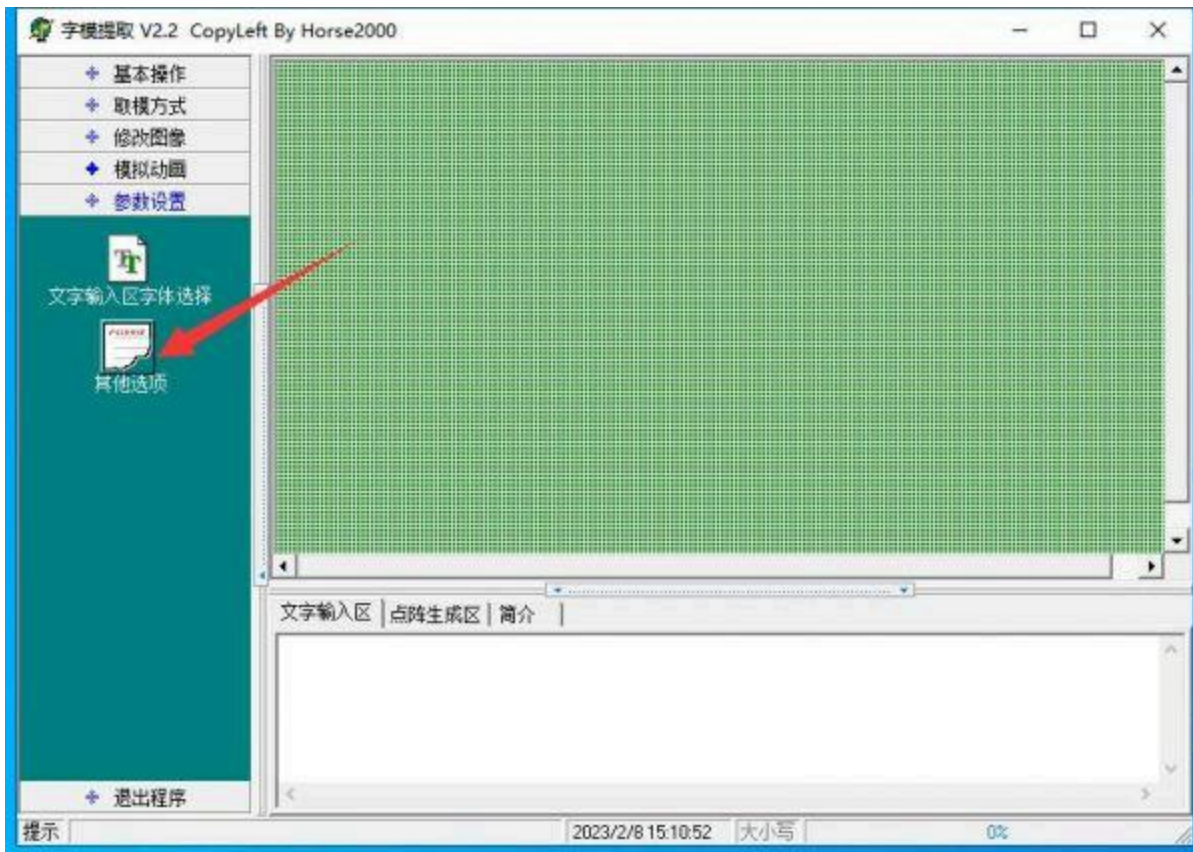
Size: 24

Character set: GB2312



(/wiki/File:Ink_Screen_Font_Library_Tutorial02.jpg)

Select "Other options".



(/wiki/File:Ink_Screen_Font_Library_Tutorial03.jpg)

Select the corresponding configuration according to the picture, and then click "OK".

Pattern extraction method: Horizontal extraction.

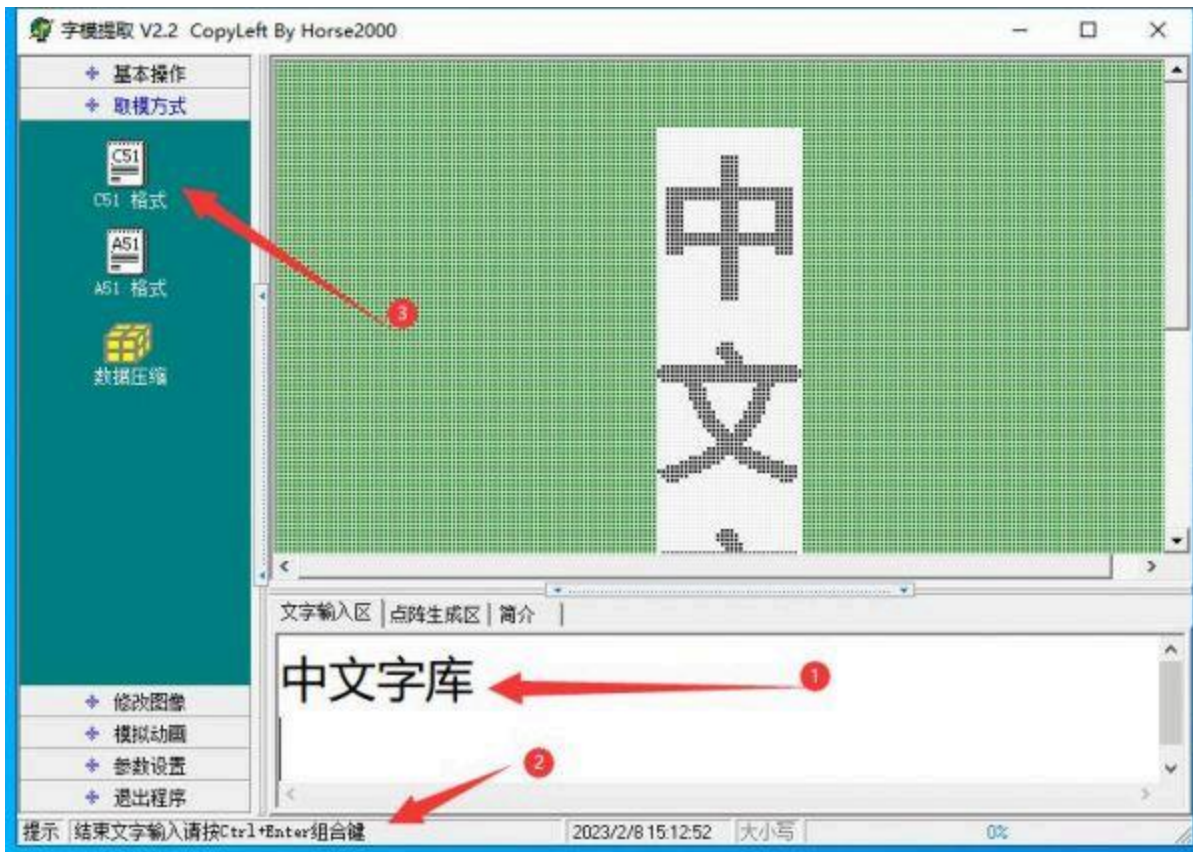
Keep a comma at the end of the reserved byte.

We will use C51 pattern extraction later, so the A51 format can be ignored.

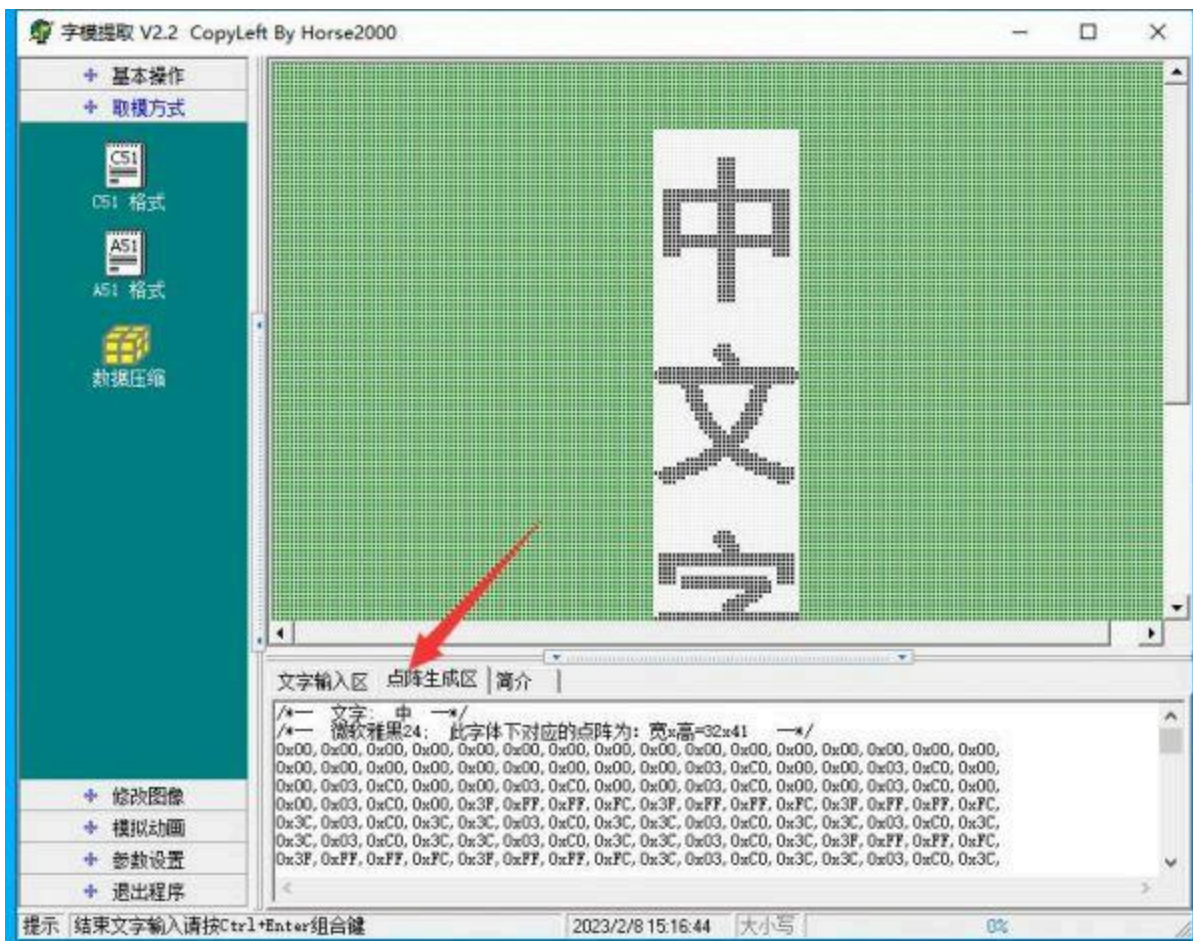


(/wiki/File:Ink_Screen_Font_Library_Tutorial04.jpg)

- ① Input the Chinese characters here, and then press Ctrl + Enter.
- ② The preview of the inputted Chinese characters is displayed in Location 2.
- ③ Click on the C51 format on the left side for the pattern extraction.
- ④ The corresponding hexadecimal data will be generated afterward.



(/wiki/File:Ink_screen_Font_Library_Tutorial05.jpg)

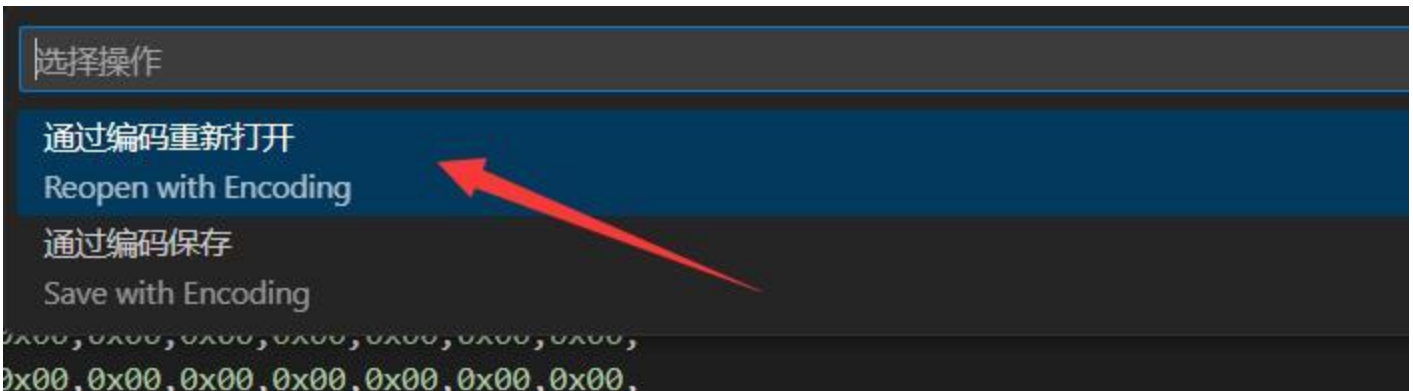


(/wiki/File:Ink_screen_font_library_tutorial06.jpg)

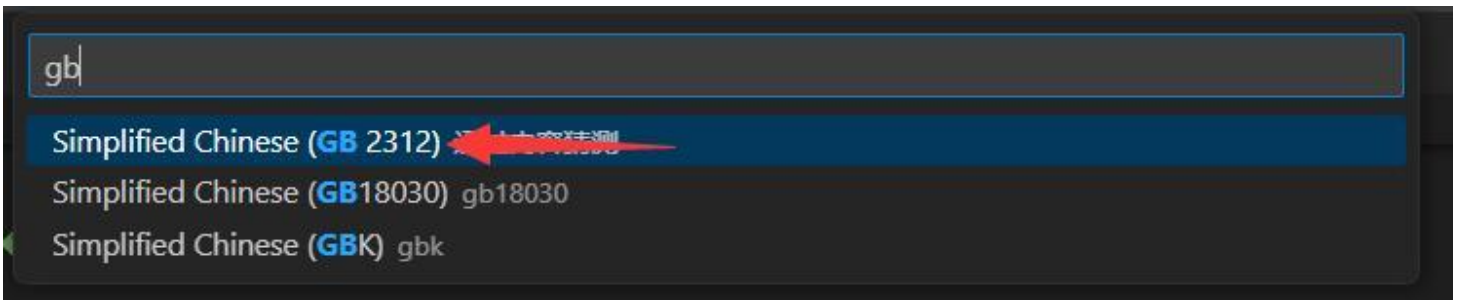
Open the corresponding file of the demo. The software I am using here is VS Code. Change the format from UTF-8 to GB2312.



(/wiki/File:Ink_screen_font_library_tutorial07.jpg)

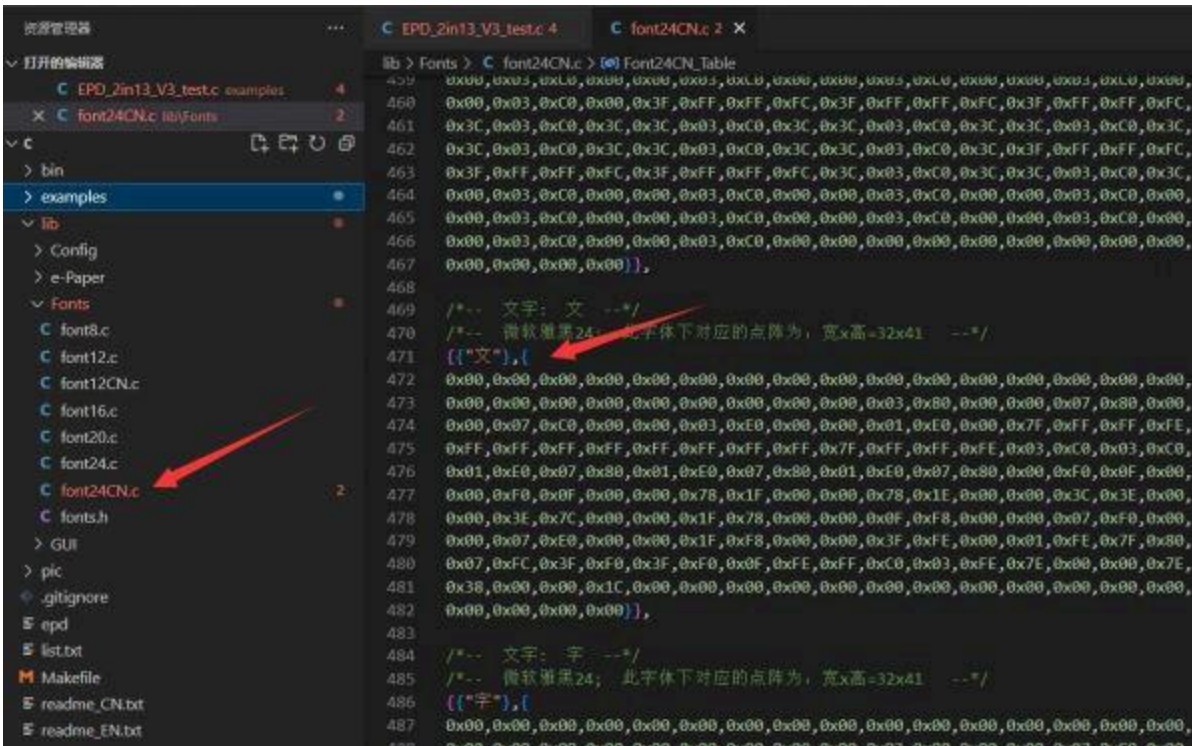


(/wiki/File:Ink_screen_font_library_tutorial08.jpg)



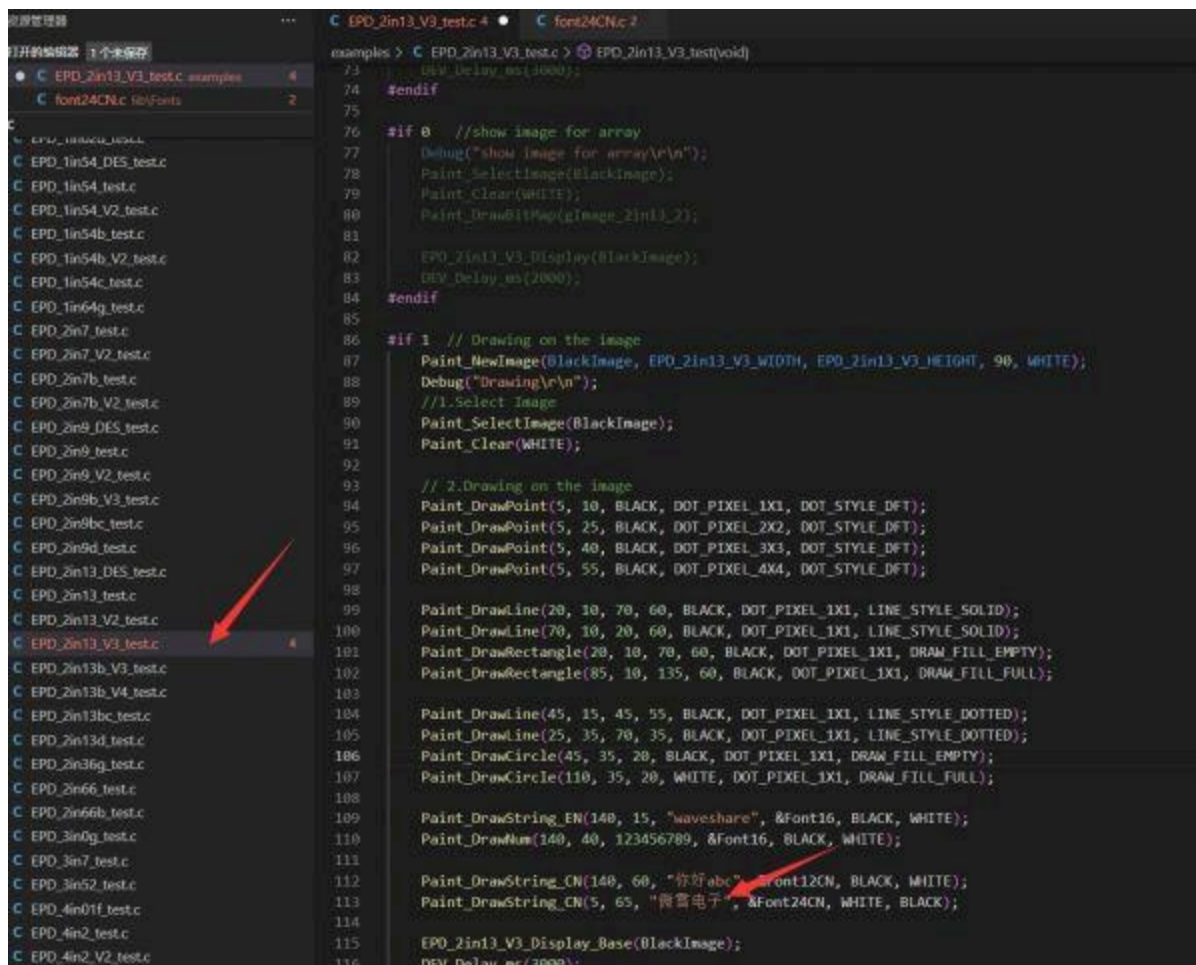
(/wiki/File:Ink_screen_font_library_tutorial09.jpg)

To copy and modify the data that has just been extracted to the corresponding file according to the file format:



(/wiki/File:Ink_screen_font_library_tutorial10.jpg)

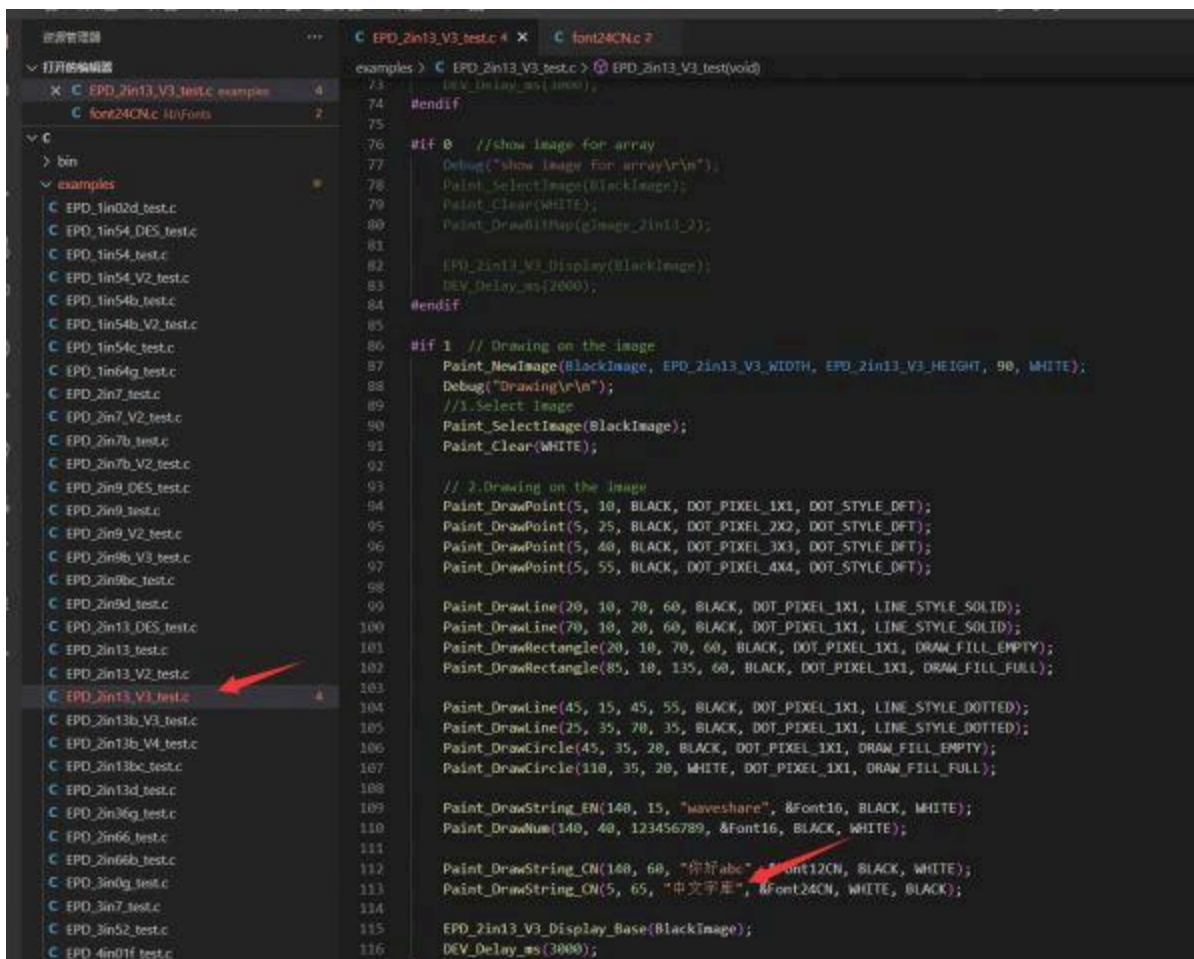
Open the "EPD_2in13_V3_test.c" file and replace "微雪电子" with "中文字库". Compile and run the demo, you will see that the previous "微雪电子" on the demo has been changed to "中文字库".



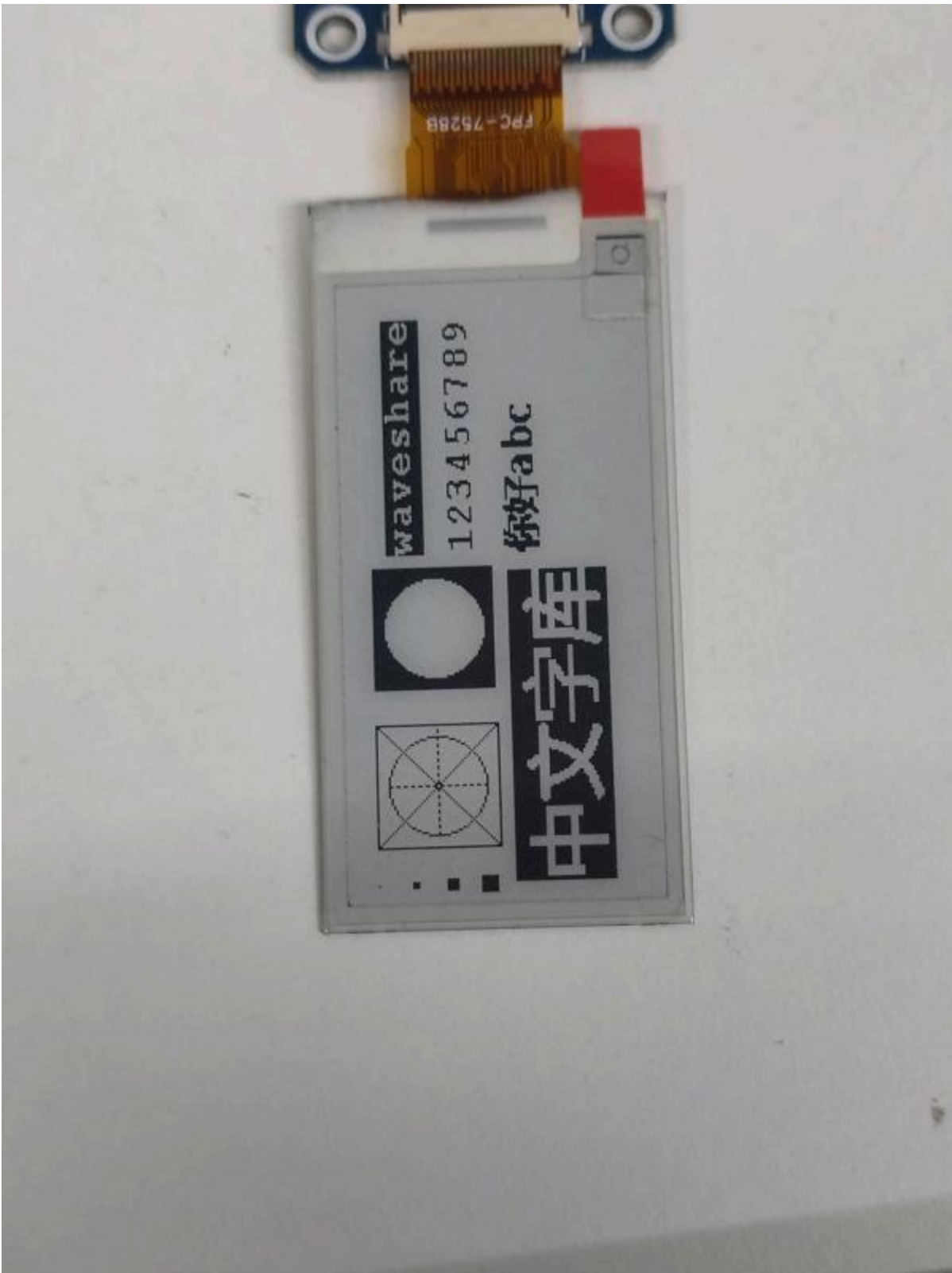
```

examples > C EPD_2in13_V3_test.c > EPD_2in13_V3_test(void)
73   DEV_Delay_ms(1000);
74   #endif
75
76   #if 0 //show image for array
77       Debug("show image for array\r\n");
78       Paint_SelectImage(BlackImage);
79       Paint_Clear(WHITE);
80       Paint_DrawBltImage(gImage_2in13_2);
81
82       EPD_2in13_V3_Display(BlackImage);
83       DEV_Delay_ms(2000);
84   #endif
85
86   #if 1 // Drawing on the image
87       Paint_NewImage(BlackImage, EPD_2in13_V3_WIDTH, EPD_2in13_V3_HEIGHT, 90, WHITE);
88       Debug("Drawing\r\n");
89       //1.Select Image
90       Paint_SelectImage(BlackImage);
91       Paint_Clear(WHITE);
92
93       // 2.Drawing on the image
94       Paint_DrawPoint(5, 10, BLACK, DOT_PIXEL_1X1, DOT_STYLE_DFT);
95       Paint_DrawPoint(5, 25, BLACK, DOT_PIXEL_2X2, DOT_STYLE_DFT);
96       Paint_DrawPoint(5, 40, BLACK, DOT_PIXEL_3X3, DOT_STYLE_DFT);
97       Paint_DrawPoint(5, 55, BLACK, DOT_PIXEL_4X4, DOT_STYLE_DFT);
98
99       Paint_DrawLine(20, 10, 70, 60, BLACK, DOT_PIXEL_1X1, LINE_STYLE_SOLID);
100      Paint_DrawLine(70, 10, 20, 60, BLACK, DOT_PIXEL_1X1, LINE_STYLE_SOLID);
101      Paint_DrawRectangle(20, 10, 70, 60, BLACK, DOT_PIXEL_1X1, DRAW_FILL_EMPTY);
102      Paint_DrawRectangle(85, 10, 135, 60, BLACK, DOT_PIXEL_1X1, DRAW_FILL_FULL);
103
104      Paint_DrawLine(45, 15, 45, 55, BLACK, DOT_PIXEL_1X1, LINE_STYLE_DOTTED);
105      Paint_DrawLine(25, 35, 70, 35, BLACK, DOT_PIXEL_1X1, LINE_STYLE_DOTTED);
106      Paint_DrawCircle(45, 35, 20, BLACK, DOT_PIXEL_1X1, DRAW_FILL_EMPTY);
107      Paint_DrawCircle(110, 35, 20, WHITE, DOT_PIXEL_1X1, DRAW_FILL_FULL);
108
109      Paint_DrawString_EN(140, 15, "waveshare", &font16, BLACK, WHITE);
110      Paint_DrawNum(140, 40, 123456789, &font16, BLACK, WHITE);
111
112      Paint_DrawString_CN(140, 60, "你好abc", &font12CN, BLACK, WHITE);
113      Paint_DrawString_CN(5, 65, "创客电子", &font24CN, WHITE, BLACK);
114
115      EPD_2in13_V3_Display_Base(BlackImage);
116      DEV_Delay_ms(3000);
  
```

(/wiki/File:Ink_screen_font_library_tutorial11.jpg)



(/wiki/File:Ink_screen_font_library_tutorial12.jpg)



(/wiki/File:Ink_screen_font_library_tutorial13.jpg)

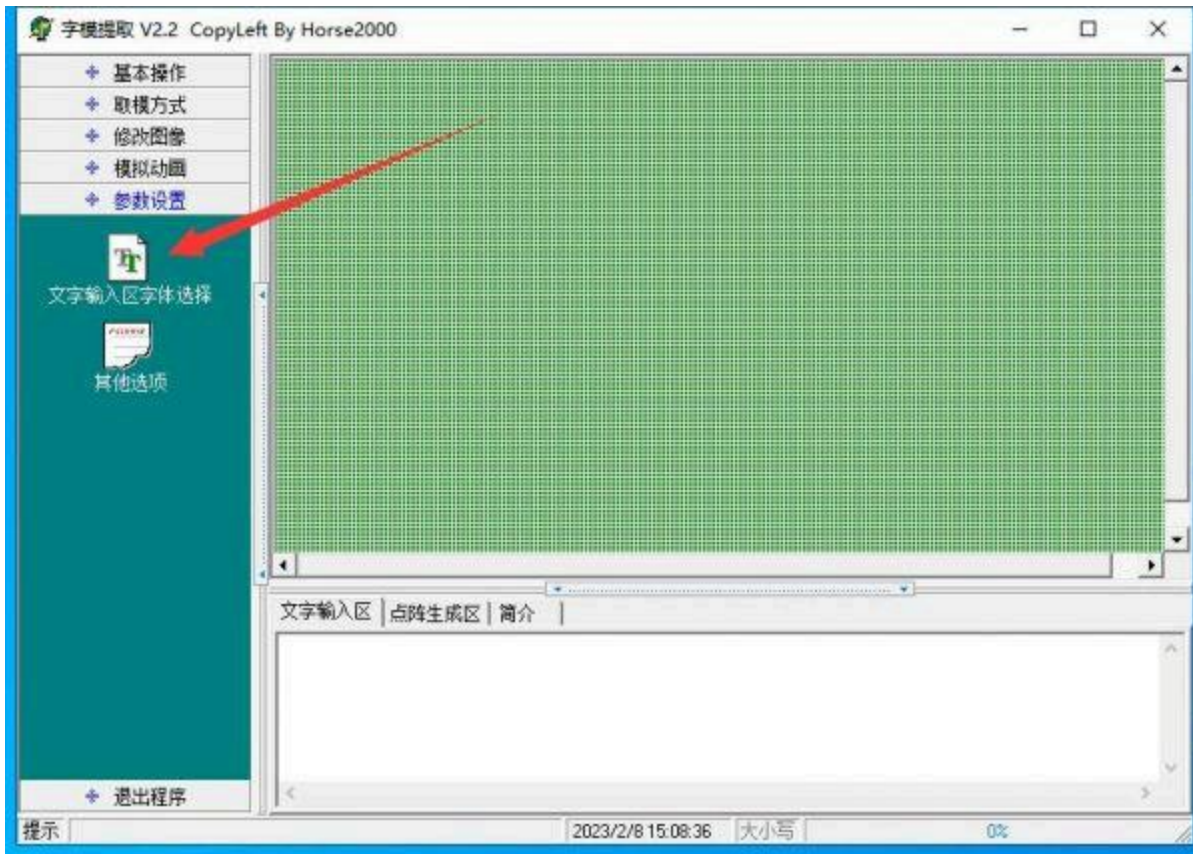
Add New Font Library

Here is an example of adding font48CN.c.

Open the Zimo221.7z (<https://files.waveshare.com/upload/c/c6/Zimo221.7z>) software and

follow the steps below to configure the software.

Choose "Font selection for the text area."



(/wiki/File:Ink_Screen_Font_Library_Tutorial01.jpg)

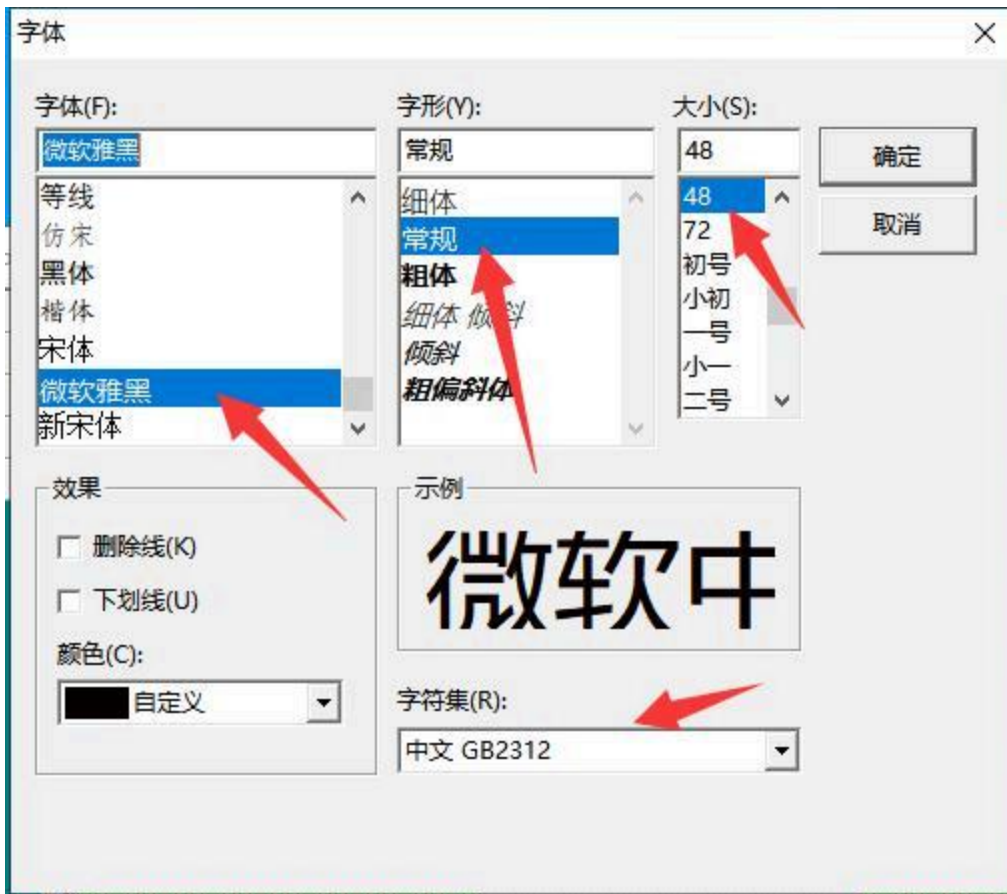
Please select the corresponding font type according to the picture, and click "OK" after completing the configuration.

Font: Microsoft YaHei

Style: Regular

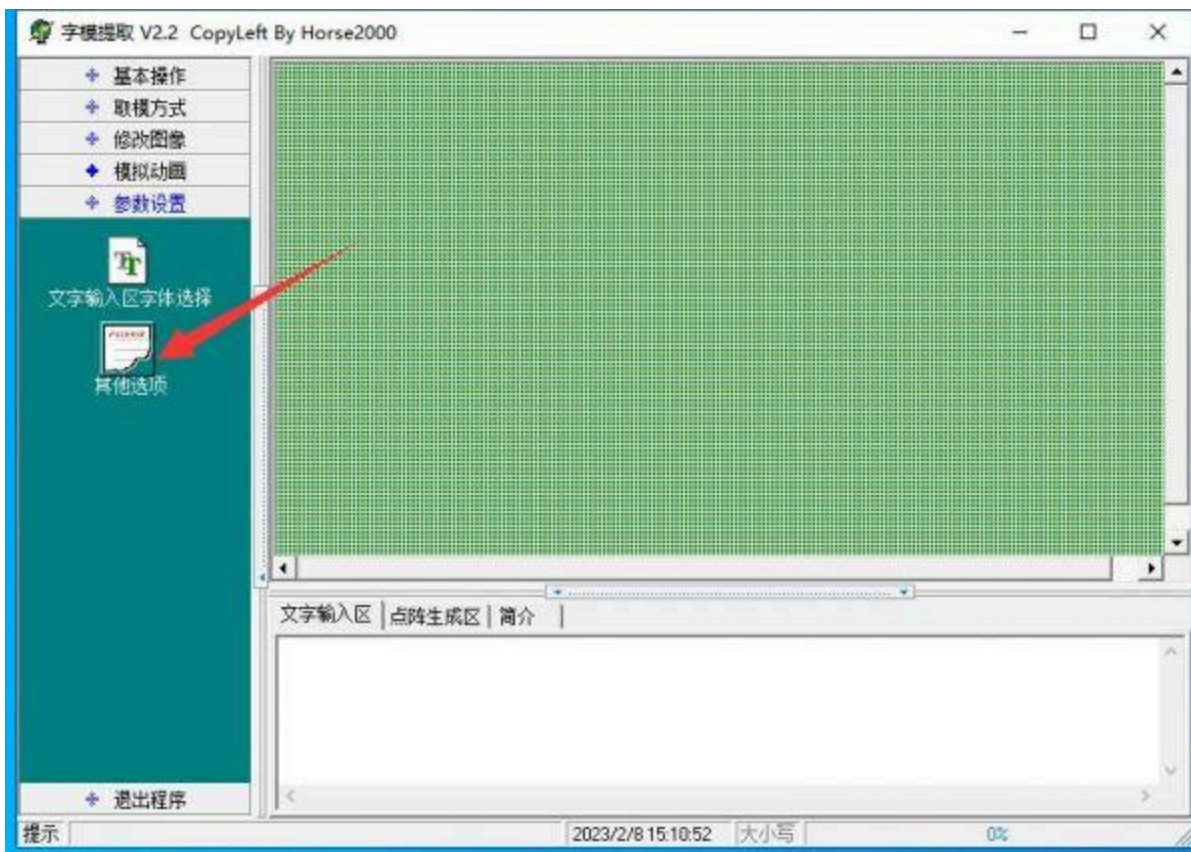
Size: 48

Character set: GB2312



(/wiki/File:Ink_Screen_Font_Library_Tutorial12.jpg)

Select "Other options".



(/wiki/File:Ink_Screen_Font_Library_Tutorial03.jpg)

Select the corresponding configuration according to the picture, and click "OK" after completing the configuration.

Pattern extraction method: Horizontal extraction.

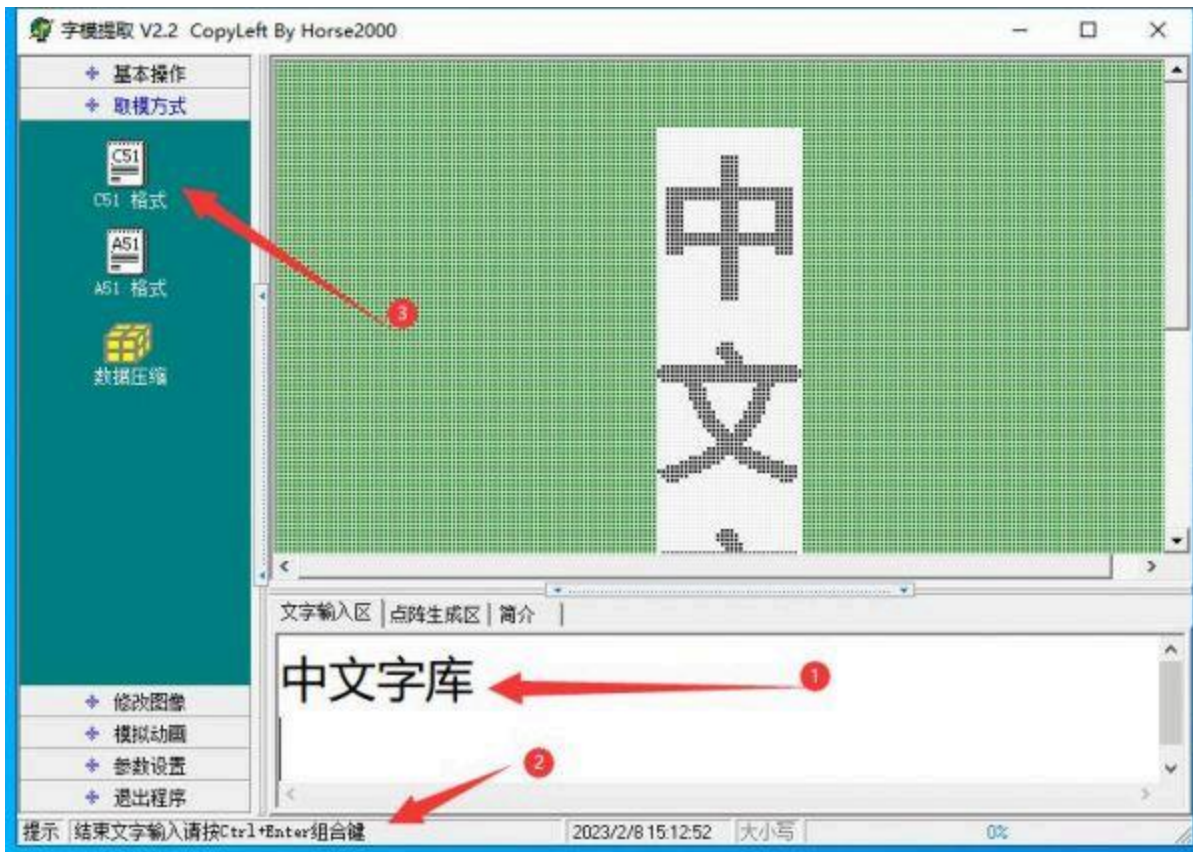
Keep a comma at the end of the reserved byte.

We will use C51 pattern extraction later, so the A51 format can be ignored.

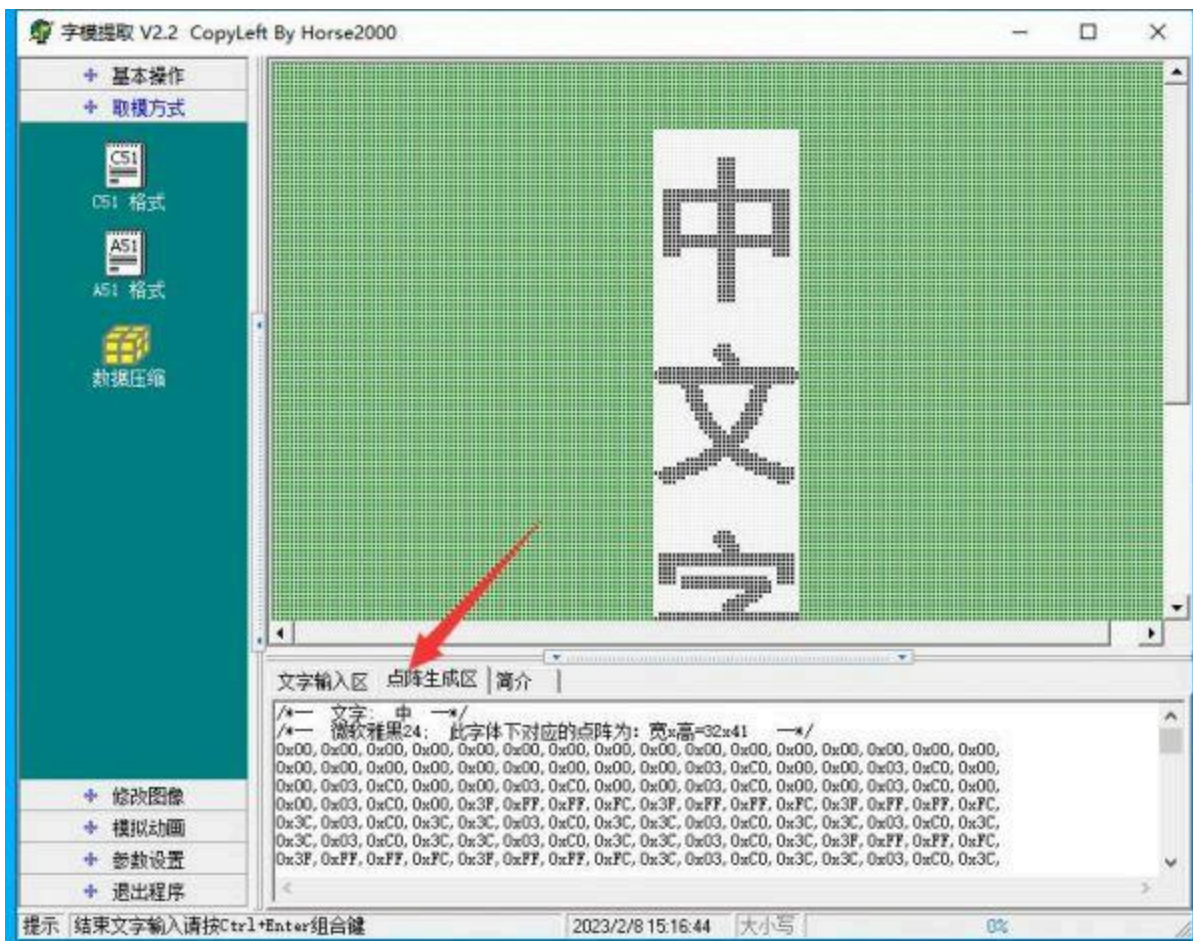


(/wiki/File:Ink_Screen_Font_Library_Tutorial04.jpg)

- ①Input the Chinese characters here, and then press Ctrl + Enter.
- ②The preview of the inputted Chinese characters is displayed in Location 2.
- ③Click on the C51 format on the left side for the pattern extraction.
- ④The corresponding hexadecimal data will be generated afterward.



(/wiki/File:Ink_screen_Font_Library_Tutorial05.jpg)



(/wiki/File:Ink_screen_font_library_tutorial06.jpg)

Create a new font48CN.c file in the corresponding file directory:

名称	修改日期	类型	大小
font8.c	2021/11/1 14:37	C 文件	17 KB
font12.c	2021/11/1 14:37	C 文件	26 KB
font12CN.c	2021/11/1 14:37	C 文件	6 KB
font16.c	2021/11/1 14:37	C 文件	47 KB
font20.c	2021/11/1 14:37	C 文件	63 KB
font24.c	2021/11/1 14:37	C 文件	95 KB
font24CN.c	2023/1/12 15:15	C 文件	31 KB
font48CN.c	2023/1/12 15:39	C 文件	16 KB
fonts.h	2023/1/12 15:44	H 文件	4 KB

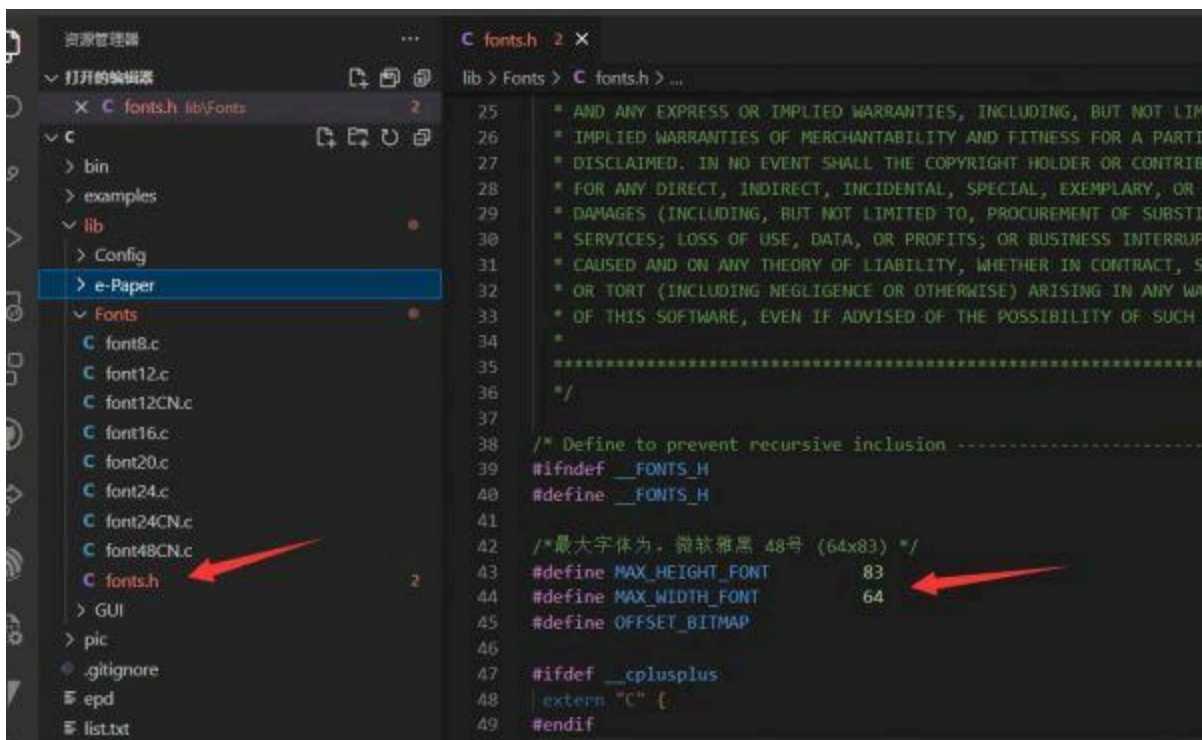
(/wiki/File:Ink_screen_font_library_tutorial6.jpg)

Follow the example of font24CN.c file and add the corresponding data to the font48CN.c file:

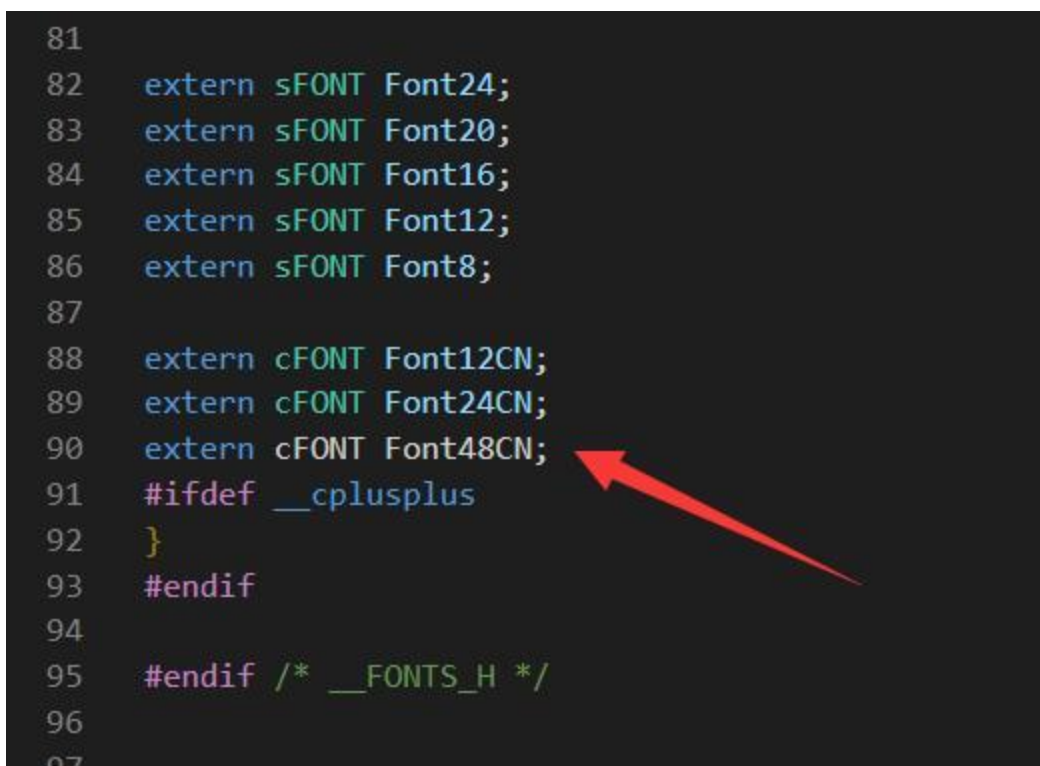
```
lib > Fonts > C font48CN.c > ...
1  #include "fonts.h"
2
3  |
4  const CH_CN Font48CN_Table[] =
5  {
6  /*-- 文字: 中 --*/
7  /*-- 微软雅黑48; 此字体下对应的点阵为: 宽x高=64x83 --*/
8  {"中"},{
9  0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x
10  0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x
11  0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x
12  0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x
13  0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x
14  0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x
15  0x00,0x00,0x00,0x07,0xE0,0x00,0x00,0x00,0x00,0x00,0x00,0x07,0xE0,0x00,0x
```

(/wiki/File:Ink_screen_font_library_tutorial7.jpg)

Modify font.h file data:



(/wiki/File:Ink_screen_font_library_tutorial8.jpg)



(/wiki/File:Ink_screen_font_library_tutoria21.jpg)

Open the file EPD_2in13_V3_test.c and modify it to the demo shown in the figure:

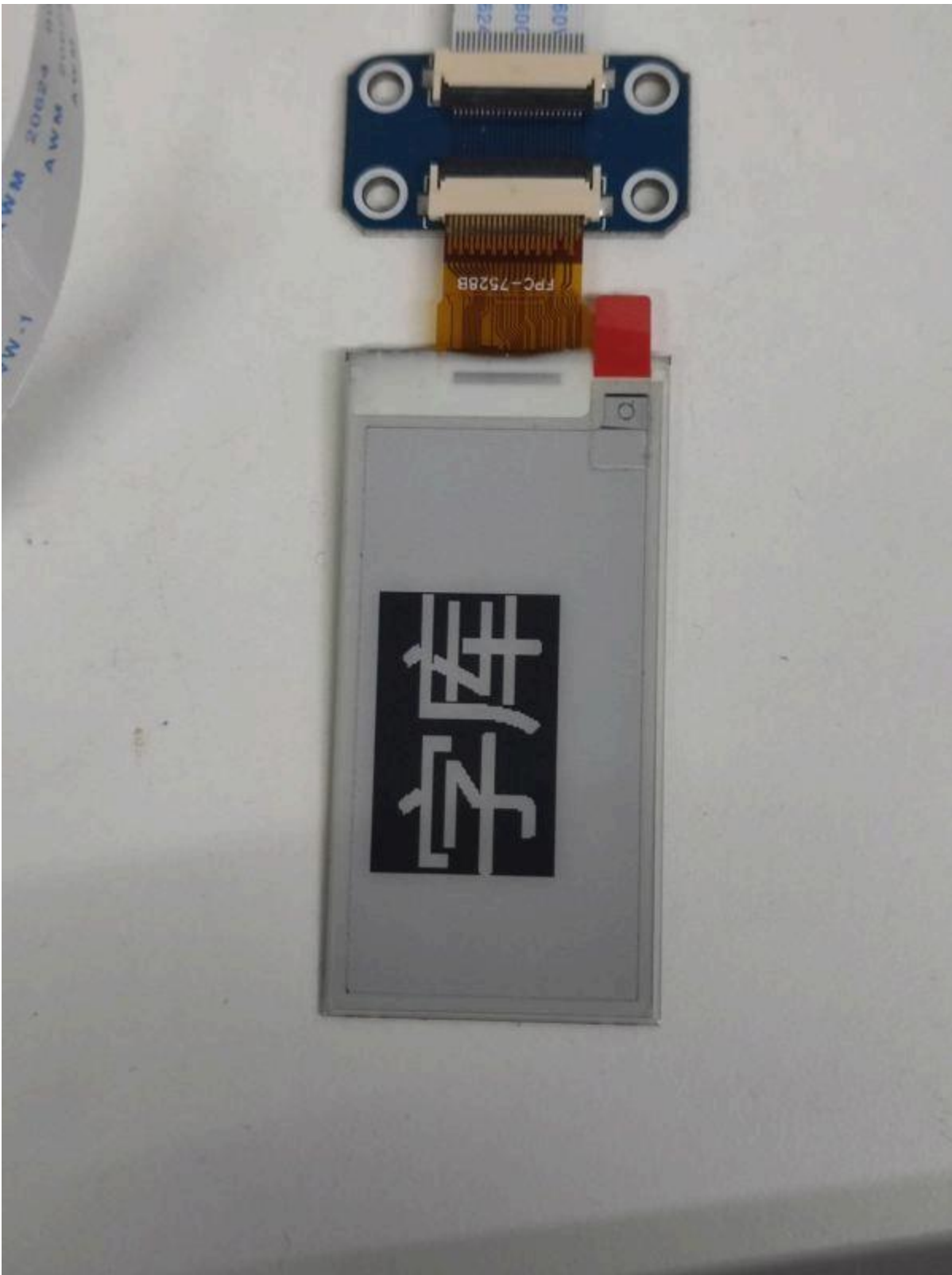
```

examples > C EPD_2in13_V3_test.c > EPD_2in13_V3_test(void)
67  DEV_Delay_ms(1000);
68
69  Debug("show loop.....\r\n");
70  Paint_SelectImage(BlackImage);
71  GUI_ReadBmp("/pic/2in13_1.bmp", 0, 0);
72  EPD_2in13_V3_Display(BlackImage);
73  DEV_Delay_ms(1000);
74  #endif
75
76  #if 0 //show image for array
77  Debug("show image for array\r\n");
78  Paint_SelectImage(BlackImage);
79  Paint_Clear(WHITE);
80  Paint_DrawBmp(gImage_2in13_2);
81
82  EPD_2in13_V3_Display(BlackImage);
83  DEV_Delay_ms(2000);
84  #endif
85
86  #if 1 // Drawing on the image
87  Paint_NewImage(BlackImage, EPD_2in13_V3_WIDTH, EPD_2in13_V3_HEIGHT, 90, WHITE);
88  Debug("Drawing\r\n");
89  //1.Select Image
90  Paint_SelectImage(BlackImage);
91  Paint_Clear(WHITE);
92
93  Paint_DrawString_CN(50, 5, "平库", &Font48CN, WHITE, BLACK);
94
95  EPD_2in13_V3_Display_Base(BlackImage);
96  DEV_Delay_ms(1000);
97  #endif
98
99  #if 0 //Partial refresh, example shows time
100  Paint_NewImage(BlackImage, EPD_2in13_V3_WIDTH, EPD_2in13_V3_HEIGHT, 90, WHITE);
101  Debug("Partial refresh\r\n");

```

(/wiki/File:Ink_screen_font_library_tutorial9.jpg)

The display effect is shown below:



(/wiki/File:Ink_screen_font_library_tutoria20.jpg)

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