

GB2312 Font Encoding Operation Manual

Application Note for 32-bit N9H20 MPU series

Document Information

Abstract	Introduce GB2312 font encoding on Nuvoton emWin.
Apply to	N9H20 MPU series.

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1 Overview

SEGGER's emWin is a GUI library which performs HMI task. However, the GB2312 font encoding is not support.

Nuvoton emWin can support GB2312 font encoding (version is v6.10f.6) on N9H20 MPU series. In addition, it allows users to utilize their existed GB2312 font data easily and flexibly.

2 Using Nuvoton emWin to Operate GB2312

Before using Nuvoton emWin to operate GB2312, please make sure the version of Nuvoton emWin GUI library is v6.10f.6 or above.

2.1 Check Library Version

The library version is defined in

\N9H20_emWin_NonOS-master\BSP\ThirdParty\emWin\Include\GUI_Version.h file.

GUI_Version.h

```
...
#define GUI_VERSION 610066
...
```

2.2 Include GB2312 Font Data

Please note that Nuvoton emWin feature does not come with any fonts or a permission or license to use any PC installed font for converting purposes. It is user's sole responsibility to not infringe upon any third party intellectual property right by making use of the fonts in its application and obtain a license if required by the legal owner of the font.

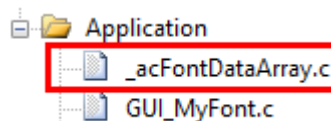


Figure 2-1 GB2312 Font Data

_acFontDataArray.c

Please note that it could contain ASCII + GB2312, respectively.

```
...

unsigned char _acFontDataArray[8888UL + 1] = {
    0x00, 0x00, ...
}
...
```

2.3 Include GB2312 Font Property

Utilize emWin font structure definition to define GB2312 font property.

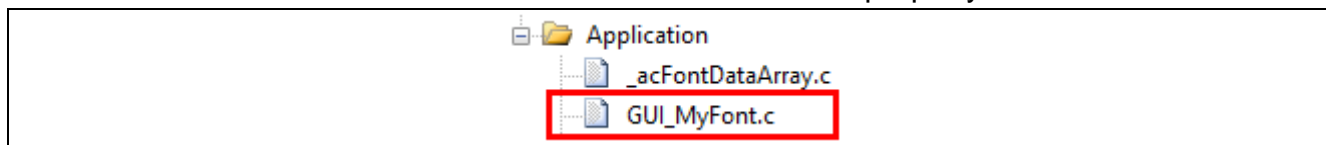


Figure 2-2 GB2312 Font Property

GUI_MyFont.c

Please note that it supports "GUI_FONTTYPE_PROP" ONLY!

```
...  
GUI_CONST_STORAGE GUI_FONT GUI_MyFont = {  
    GUI_FONTTYPE_PROP,  
    ...  
}  
...
```

2.4 Enable GB2312 Font Encoding

After initialize GUI library, then enable GB2312 font encoding support.

```
...  
//  
// Init emWin  
//  
GUI_Init();  
//  
// Enable GB2312  
//  
NVT_GUI_GB_SetEncodeGB2312();  
...
```

2.5 Set GB2312 Data Offset

In this case, GB2312 font data offset is in 0x00000800.

```
...  
//  
// _acFontDataArray is your font data in c array  
// _u32Gb2312FontDataOffset means the first GB2312 font data offset, e. g., 0x00000800  
//  
NVT_GUI_SetGB2312Offset((U32)_acFontDataArray, _u32Gb2312FontDataOffset);  
...
```

2.6 Set ASCII Data Offset

In this case, ASCII font data offset is in 0x00000000.

Please note that if font data doesn't contain ASCII font data, users don't need to set ASCII data offset.

```
...  
//  
// _acFontDataArray is your font data in c array  
// _u32AsciiFontDataOffset means the first ASCII font data offset, e. g., 0x00000000  
//  
NVT_GUI_SetASCIIOffset((U32)_acFontDataArray, _u32AsciiFontDataOffset);  
...
```

2.7 Set Font Name

Before draw GB2312 font, users need to set font name.

```
...  
//  
// GUI_MyFont is a user defined font that utilizes emWin font structure  
//  
GUI_SetFont(&GUI_MyFont);  
...
```

2.8 Draw GB2312 Font

Examples for drawing GB2312 font:

```
...  
//  
// If your IDE and compiler support GB2312 font encoding:  
//  
GUI_DispString("啊\n");  
//  
// Or utilize hex code:  
// The first byte 0xb0 is "区码" and the second byte 0xa1 is "位码"  
// 0xb0, 0xa1 equals 啊  
//  
GUI_DispString("\xb0\xa1\n");  
//  
// Combination ASCII and GB2312  
//  
GUI_DispString("Hello! World~\xb0\xa1"GB2312 test OK!\n");  
...
```

3 Conclusion

User can utilize their existed font data to show GB2312 font on Nuvoton emWin GUI library. Such font feature ensures that the user can develop application more conveniently.

Revision History

Date	Revision	Description
2021.01.14	1.00	1. Initially issued.

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