

Keywords: SSD1963, Microchip PIC32, PIC32 Starter Kits, VS1003B audio codec, Microchip PIC32 Plays MP3, WiFi, 4.3" TFT GUI, 5" TFT GUI, 7" TFT GUI

How to use this demo

1. Software required

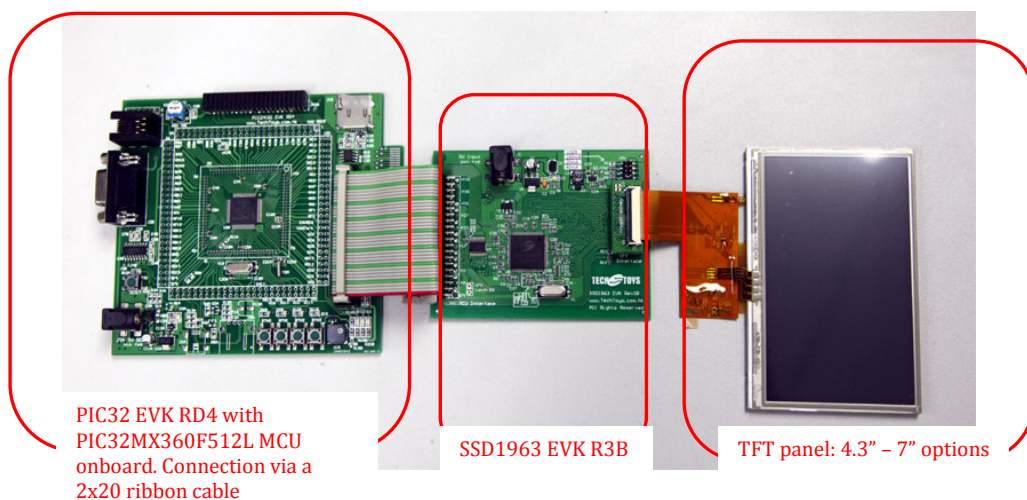
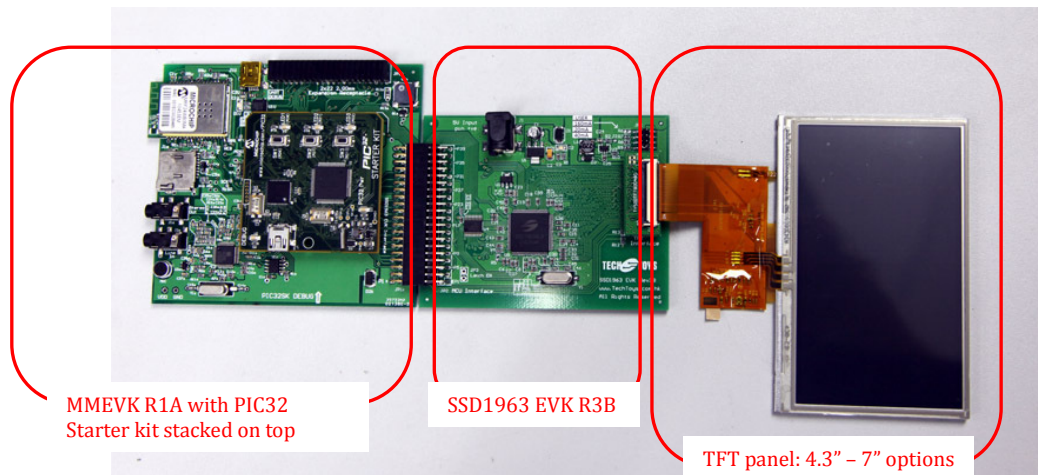
- MPLAB IDE v8.63
- C32 compiler version 2.00
- Firmware folder date version 2011_10_10

2. Hardware required

- PIC32-SSD1963 Multimedia Evaluation Kit (MMEVK) R1A (PIC32 starter kit required, sold by Microchip Inc separately)
-or-
- PIC32 EVK RD4 with PIC32MX360F512L MCU onboard
- SSD1963 EVK R3B
- Display panel (TY430, TY500, TY600, or TY700 panels from us, with size ranges from 4.3" to 7")

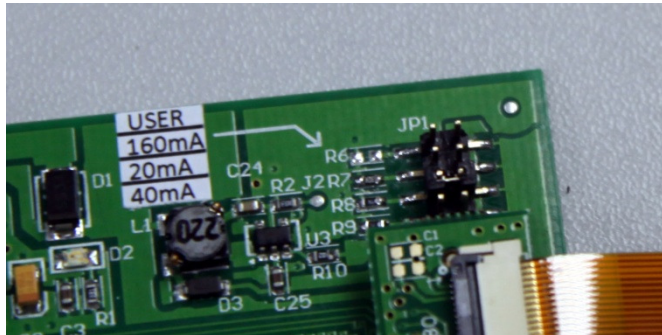
3. Procedure

- Prepare the hardware with options as follow. There are several combinations possible.



Keywords: SSD1963, Microchip PIC32, PIC32 Starter Kits, VS1003B audio codec, Microchip PIC32 Plays MP3, WiFi, 4.3" TFT GUI, 5" TFT GUI, 7" TFT GUI

- Select a suitable jumper position for TFT panel's backlight. Please refer to datasheet of individual TFT panel for the current required.



- Finally, apply 5V (1A) to J1 of SSD1963 EVK R3B as power supply. This last step finishes the hardware setup.
- Download from our web page the latest firmware version. At time of writing, the latest version is on 10th Oct 2011 (Rev 2011_10_10). There are two MCU boards from us but the same firmware folder applies to both development boards. They share the same firmware folder. Unzip the rar file to any location. This rar file contains also the source code for MCHP graphics libraries that are essential for us.

Document & Software			
Doc 01	Schematics (Rev 2011_07_25)	98 KB	
Doc 02	User Guide (Rev 2011_07_26)	3,444 KB	
Doc 03	Firmware (Rev 2011_10_10)	18,174 KB	
Doc 04	The first demo program (Document & firmware on User Guide)		
Doc 05	TCP/IP demo using wireless network (Document & firmware on User Guide)		
Doc 06	Interfacing SSD1963 (Document & firmware on User Guide)		
Doc 07	Port to Microchip Graphics Library v3.0.1 Primitive Layer Demo with SSD1963		
Doc 08	Port to Microchip Graphics Library v3.0.1 Object Layer Demo with SSD1963		

- Launch MPLAB, browse to the root directory of the Object Layer demo under ..\Firmware\MCHP_2011_07_14\Graphics\Object Layer. The filename that contains "MCHP_2011_07_14" indicates the date version of Microchip Application Libraries. According to your hardware combination select the appropriate project.

The 'Open Project' dialog box shows the following file list:

- Resources
 - GOLDemo PIC32 ETH SK
 - GOLDemo PIC32 GP SK
 - GOLDemo PIC32 USB SK
 - GOLDemo PIC32MX360F512L EVK RD4

Arrows point from the following labels to the corresponding files in the list:

- PIC32 Ethernet SK on MMEVK
- PIC32 General purpose SK on MMEVK
- PIC32 USB SK on MMEVK
- PIC32 EVK RD4 evaluation board

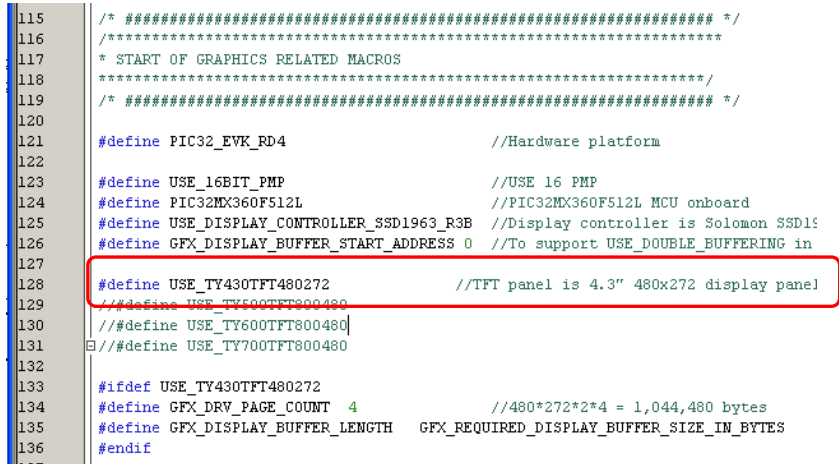
Keywords: SSD1963, Microchip PIC32, PIC32 Starter Kits, VS1003B audio codec, Microchip PIC32 Plays MP3, WiFi, 4.3" TFT GUI, 5" TFT GUI, 7" TFT GUI

- There are only two files to change for a particular hardware setup. They are HardwareProfile.h and selection of the appropriate TFT panels from the corresponding hardware profile. Double click on HardwareProfile.h. Select the right hardware profile as below. *Only one #include “...” is needed.*



```
D:\Projects\PIC32STK_SSD1963\Firmware\MCHP_2011_07_14\Graphics\Object Layer\HardwareProfile.h
49 * 06/02/11 Added MPLAB X Support
50 *****
51 #if defined (__PIC32MX__)
52
53 /*****
54 * Hardware Configuration for
55 * PIC32 GP SK stack on TechToy's MMEVK R1A
56 * Graphics SSD1963 EVK R3B
57 * Display 4.3" - 7" TFT
58 *****/
59 #include "Configs/HWP_PIC32_SKs_ON_MMEVK_16PMP.h"
60 /*****
61 * Hardware Configuration for
62 * PIC32MX360F512L on PIC32_EVK_RD4 evaluation board
63 * Graphics SSD1963 EVK R3B
64 * Display 4.3" - 7" TFT
65 *****/
66 //#include "Configs/HWP_PIC32MX360F512L_EVK_RD4.h"
67 #endif
```

- Next, select the panel you are using. Open the corresponding hardware profile for your hardware. If it is a MMEVK, select HWP_PIC32_SKs_ON_MMEVK_16PMP.h, else, select HWP_PIC32MX360F512L_EVK_RD4.h
Browse the file to the section #define USE_TYXXXTFTXXXXX as below. Uncomment all other options except the panel you are using.

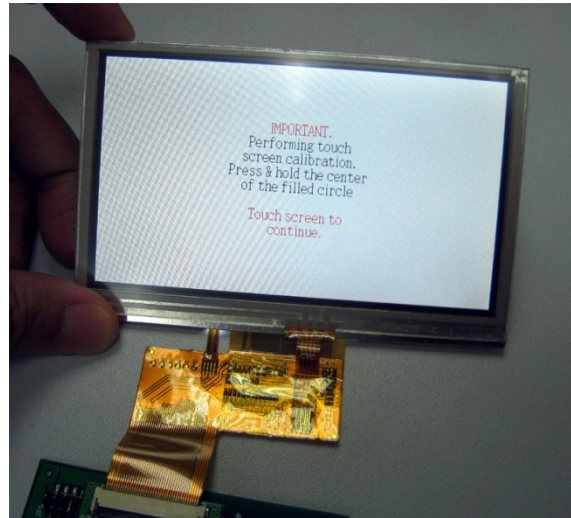


```
115 /* ***** */
116 /*****
117 * START OF GRAPHICS RELATED MACROS
118 *****
119 /* ***** */
120
121 #define PIC32_EVK_RD4 //Hardware platform
122
123 #define USE_16BIT_PMP //USE 16 PMP
124 #define PIC32MX360F512L //PIC32MX360F512L MCU onboard
125 #define USE_DISPLAY_CONTROLLER_SSD1963_R3B //Display controller is Solomon SSD1963
126 #define GFX_DISPLAY_BUFFER_START_ADDRESS 0 //To support USE_DOUBLE_BUFFERING in
127
128 #define USE_TY430TFT480272 //TFT panel is 4.3" 480x272 display panel
129 //#define USE_TY500TFT800480
130 // #define USE_TY600TFT800480
131 // #define USE_TY700TFT800480
132
133 #ifndef USE_TY430TFT480272
134 #define GFX_DRV_PAGE_COUNT 4 //480*272*2*4 = 1,044,480 bytes
135 #define GFX_DISPLAY_BUFFER_LENGTH GFX_REQUIRED_DISPLAY_BUFFER_SIZE_IN_BYTES
136 #endif
```

- Finally, *Build All from Project* and program the board.

Keywords: SSD1963, Microchip PIC32, PIC32 Starter Kits, VS1003B audio codec, Microchip PIC32 Plays MP3, WiFi, 4.3" TFT GUI, 5" TFT GUI, 7" TFT GUI

- Now, calibrate the touch screen by touch & hold the screen with system reset. Because there is no reset key on PIC32 Starter Kits, we need to remove and re-apply system power or performing a reset by *Debugger->Reset* under MPLAB. Picture on the right shows an example with 4.3" TFT panel with Touch Screen Calibration initiated.



- Follow the calibration procedure by press & hold the center of the filled circles that will come up next. *There is a little trick from hands on experience: do press, hold, and release slowly with visual instruction on screen. Don't jump it too fast; otherwise, the program may hang up!*

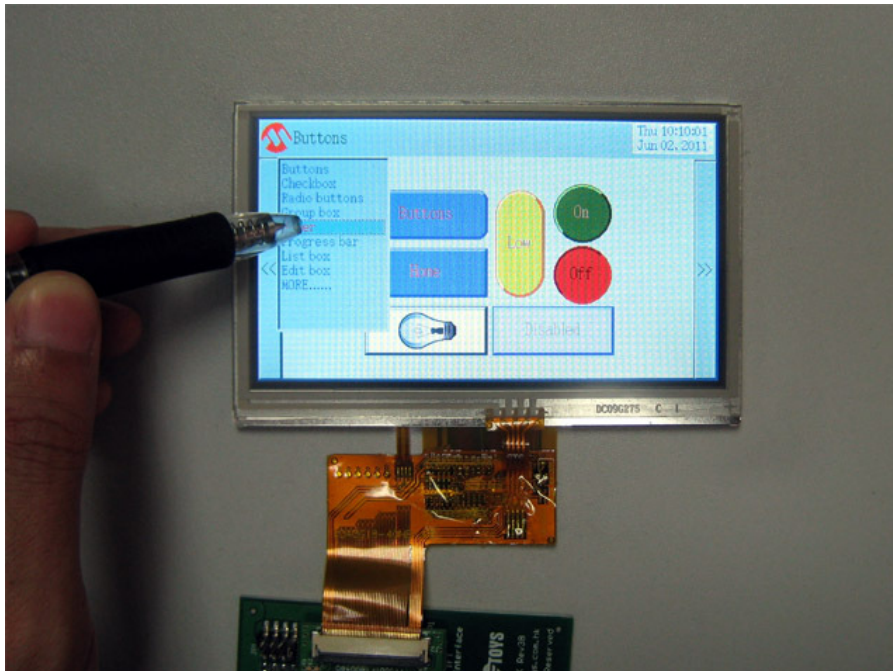


- Finishing the calibration procedure will lead to an animated page with English and Chinese fonts on it.



Keywords: SSD1963, Microchip PIC32, PIC32 Starter Kits, VS1003B audio codec, Microchip PIC32 Plays MP3, WiFi, 4.3" TFT GUI, 5" TFT GUI, 7" TFT GUI

- A tap on the upper left corner will show a pull-down manual with Buttons, Checkbox, Radio buttons, etc. Those are all widgets that are available with MCHP Graphics Library.



Keywords: SSD1963, Microchip PIC32, PIC32 Starter Kits, VS1003B audio codec, Microchip PIC32 Plays MP3, WiFi, 4.3" TFT GUI, 5" TFT GUI, 7" TFT GUI

Revision

	Description	Date
1	First Draft.....	5 th Sept 2011
2	Second draft with Touch Screen Calibration for PIC32 Starter Kits.....	23 rd Sept 2011
3	Debug for a typo error in SSD1963.c for TY500TFT800480 panel.....	10 th Oct 2011
4	Program verified for PIC32_EVK_RD4 + SSD1963 EVK R3B platform + TY700TFT800480	10 th Oct 2011