



Description	7" TFT LCD Module with Touch Panel retrofit
Model Name	TY700TFT800480
Product Revision	03
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Interface with new 4-wire resistive Touch Panel retrofit

New LCM PIN Definition

Pin No.	Symbol	Description	Remark
1	LED-K	LED backlight (Cathode)	
2	LED-A	LED backlight (Anode)	
3	GND	Ground	
4	V _{cc}	Power Supply for Digital Circuit (+3.0V)	
5-12	R0-R7	Red Data	
13-20	G0-G7	Green Data	
21-28	B0-B7	Blue Data	
29	GND	Ground	
30	CLK	Clock (Latch data at CLK falling edge)	
31	DISP	Display On/Off	
32	HSYNC	Horizontal sync input in RGB mode	
33	VSYNC	Vertical sync input in RGB mode	
34	DEN	Data Enable	
35	NC	Not connected	
36	GND	Ground	
37	YU	Touch panel at Y-up	
38	XR	Touch panel at X-right	
39	YD	Touch panel at Y-down	
40	XL	Touch panel at X-left	

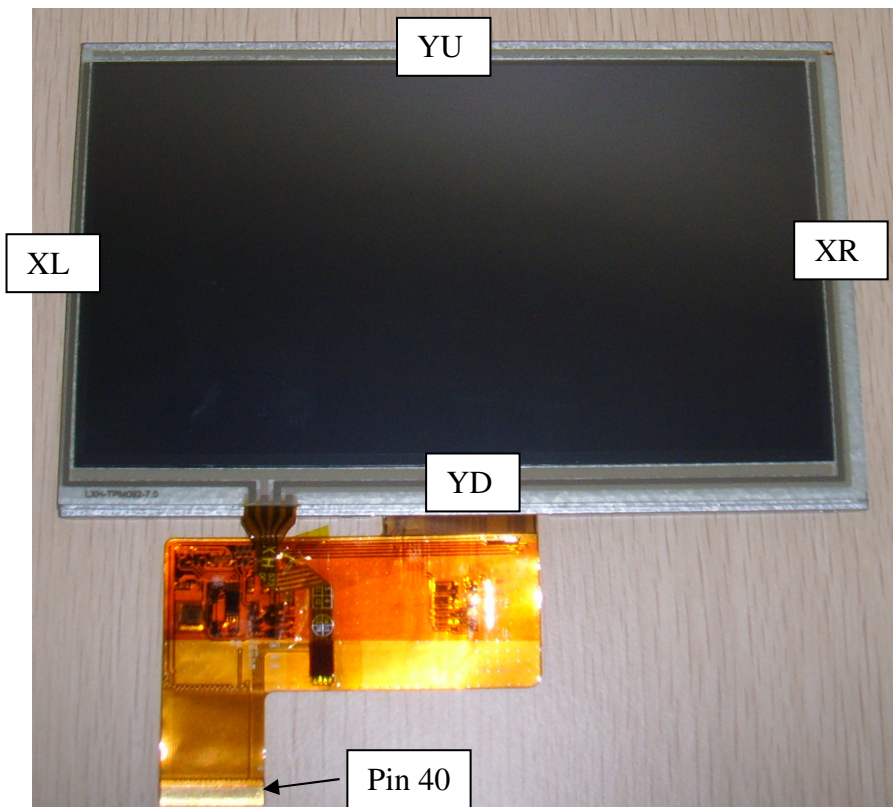
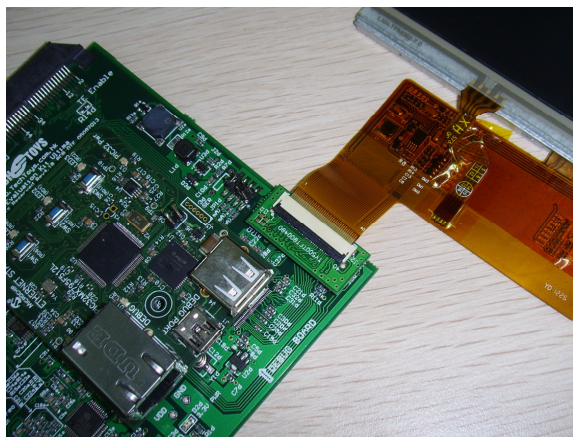
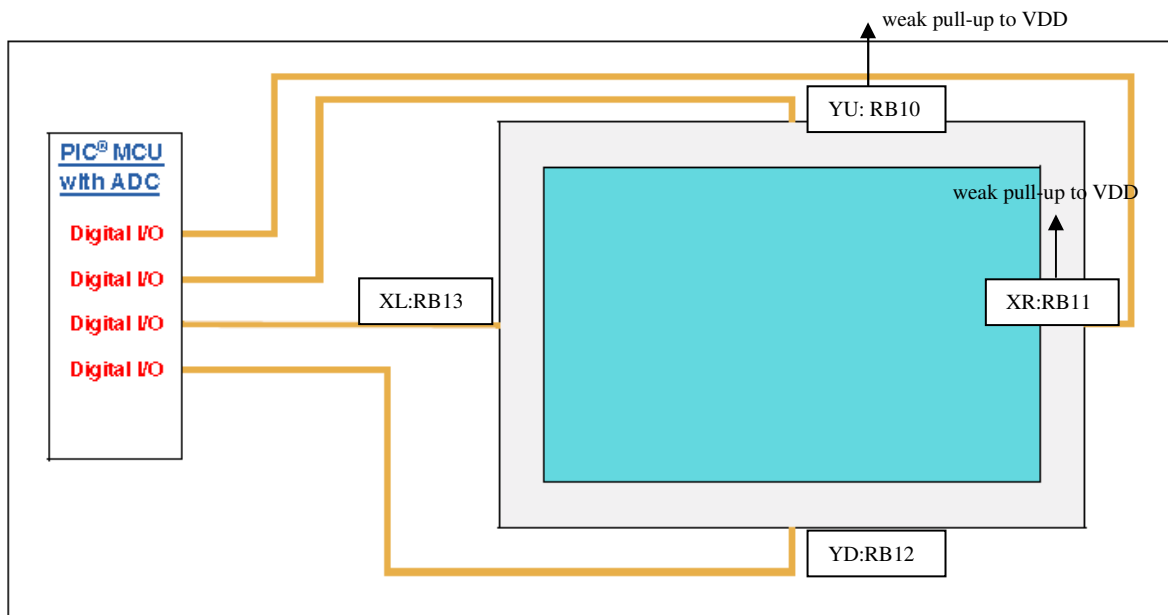


Table below shows the change in pin assignment.

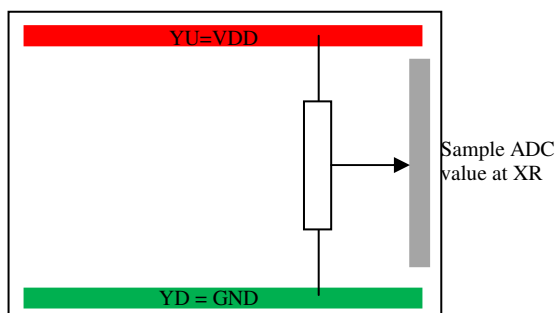
Original	YU	XL	YD	XR
New	XL	YD	XR	YU

This is how connection is made with our SSD1963 Ultima Board when a Microchip Ethernet Starter Kit is stacked on it.

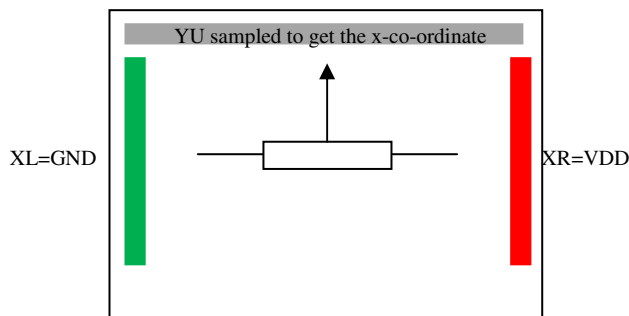


Resistive touch panel works like a potential divider. Measuring a touch position is actually to measure the voltage at XR and YU when a DC voltage applied in the direction YU(+ve)-YD(-ve) and XR(+ve)-XL(-ve), respectively.

The y-coordinate is found by measuring ADC value of XR when YU energized to VDD and YD pulled GND. Weak pull-up at XR is necessary to return a known state when no touch action is pressed.



Similarly, the x-coordinate is found by measuring YU when XR energized to VDD and XL pulled to GND with illustration shown below.



Firmware changes are merely pinout definitions in hardware profile.

Example below shows an extract from the header file HWP_PIC32_ETH_SK_SSD1963_ULTIMA_R4_16PMP.h .

This file is located in the firmware folder ..\Graphics\ObjectLayer\Configs.

Convention in the source code is shown below.

Resistive wire	Definition	Pin assignment
YU	ADC_YPOS	RB10 (AN10)
XR	ADC_XPOS	RB11(AN11)
YD	LAT_YNEG	RB12 (digital GPIO)
XL	LAT_XNEG	RB13 (digital GPIO)

```

Start Page x | SSD1963.c x | HWP_PIC32_ETH_SK_SSD1963_ULTIMA_R4_16PMP.h x
492 |     1. X+ and Y+ are mapped to the A/D inputs
493 |     2. X- and Y- are mapped to the pure digital I/Os
494 | - */
495 | #if defined (USE_TOUCHSCREEN_RESISTIVE)
496 |     #define TOUCH_ADC_INPUT_SEL    AD1CHS
497 |     // ADC Sample Start
498 |     #define TOUCH_ADC_START        AD1CON1bits.SAMP
499 |     // ADC Status
500 |     #define TOUCH_ADC_DONE         AD1CON1bits.DONE
501 |     //Sampling for a IP retrofit
502 |     #define ADC_YPOS                ADC_CH0_POS_SAMPLEA_AN10
503 |     #define ADC_XPOS                ADC_CH0_POS_SAMPLEA_AN11
504 |     // X port definitions
505 |     #define ADPCFG_YPOS             AD1PCFGbits.PCFG10
506 |     #define LAI_YPOS                LAIBbits.LAIB10
507 |     #define LAI_YNEG               LAIBbits.LAIB12
508 |     #define IRIS_YPOS              IRISBbits.IRISB10
509 |     #define IRIS_YNEG              IRISBbits.IRISB12
510 |     // Y port definitions
511 |     #define ADPCFG_XPOS             AD1PCFGbits.PCFG11
512 |     #define LAI_XPOS                LAIBbits.LAIB11
513 |     #define LAI_XNEG               LAIBbits.LAIB13
514 |     #define IRIS_XPOS              IRISBbits.IRISB11
515 |     #define IRIS_XNEG              IRISBbits.IRISB13

```

The next step is to make sure the condition to swap x-y sampling is defined because we are measuring x-coordinate with Y-POS and y-coordinate with X-POS.

```
*****/  
#if defined (USE_IY4301FI480272) || defined (USE_IY5001FI800480) || defined (USE_IY7001FI800480) || defined (USE_IY7001FI800480_R3)  
    #define TOUCHSCREEN_RESISTIVE_CALIBRATION_SCALE_FACTOR 5  
    //pending calibration... for DISP_ORIENTATION  
    #if (DISP_ORIENTATION == 0)  
        #define TOUCHSCREEN_RESISTIVE_SWAP_XY  
    #elif (DISP_ORIENTATION == 180)  
        #error DISP_ORIENTAIIION 180 DEG not supported yet  
    #elif (DISP_ORIENTAIIION == 270)  
        #error DISP_ORIENTAIIION 270 DEG not supported yet  
    #endif  
#endif
```

Finally, reset the system with the screen touched and held for calibration.

Here we have a new Touch Screen.

