

TABLE 1: SIGNAL INTERFACE FOR DISPLAY CONNECTOR (CONTINUED)

Pin No.	Symbol	Level	Description
A14	VSYNC	O	Frame pulse
B14	HSYNC	O	Line pulse
A15-A26, B15-B26	R0-R7, D0-D7, B0-B7	O	24-bit data
A27	GPO (DISP_ON)	O	Can be configured for display on or as general purpose output
B27	CS	I/O	Can be used for SPI Chip Select (CS) or as general purpose I/O
A28	SCK	I/O	Can be used for SPI Synchronous Serial Clock (SCK) or as general purpose I/O
B28	SDO (MOSI)	I/O	Can be used for SPI Master Out Slave In (MOSI) or as general purpose I/O
A29	SDI (MISO)	I/O	Can be used for SPI Master In Slave Out (MISO) or as general purpose I/O
A30-A31, B29-B31	NC	—	Not connected
A32, B32	GND	GND	Ground

**Americas**

Atlanta - 678-957-9614  
 Boston - 774-760-0087  
 Chicago - 630-285-0071  
 Cleveland - 216-447-0464  
 Dallas - 972-818-7423  
 Detroit - 248-538-2250  
 Indianapolis - 317-773-8323  
 Los Angeles - 949-462-9523  
 Phoenix - 480-792-7200  
 Santa Clara - 408-961-6444  
 Toronto - 905-673-0699

**Europe**

Austria - Wels - 43-7242-2244-39  
 Denmark - Copenhagen - 45-4450-2828  
 France - Paris - 33-1-69-53-63-20  
 Germany - Munich - 49-89-627-144-0  
 Italy - Milan - 39-0331-742611  
 Netherlands - Drunen - 31-416-690399  
 Spain - Madrid - 34-91-708-08-90  
 UK - Wokingham - 44-118-921-5869

**Asia/Pacific**

Australia - Sydney - 61-2-9868-6733  
 China - Beijing - 86-10-8528-2100  
 China - Chengdu - 86-28-8665-5511  
 China - Chongqing - 86-23-8980-9588  
 China - Hong Kong SAR - 852-2401-1200  
 China - Nanjing - 86-25-8473-2460  
 China - Qingdao - 86-532-8502-7355  
 China - Shanghai - 86-21-5407-5533  
 China - Shenyang - 86-24-2334-2829  
 China - Shenzhen - 86-755-8203-2660  
 China - Wuhan - 86-27-5980-5300  
 China - Xiamen - 86-592-2388138  
 China - Xian - 86-29-8833-7252  
 China - Zhuhai - 86-756-3210040  
 India - Bangalore - 91-80-3090-4444  
 India - New Delhi - 91-11-4160-8631  
 India - Pune - 91-20-2566-1512  
 Japan - Yokohama - 81-45-471-6166  
 Korea - Daegu - 82-53-744-4301  
 Korea - Seoul - 82-2-554-7200  
 Malaysia - Kuala Lumpur - 60-3-6201-9857  
 Malaysia - Penang - 60-4-227-8870  
 Philippines - Manila - 63-2-634-9065  
 Singapore - 65-6334-8870  
 Taiwan - Hsin Chu - 886-3-6578-300  
 Taiwan - Kaohsiung - 886-7-213-7830  
 Taiwan - Taipei - 886-2-2500-6610  
 Thailand - Bangkok - 66-2-694-1351

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DS51966A



# Low-Cost Controllerless (LCC) Graphics PICtail™ Plus Daughter Board Information Sheet

## Features

- Controller-less graphics support for 4/8-bit STN, 4/8-bit CSTN, 18-bit HR-TFT and 9/12/18/24-bit TFT interfaces (additional samples can be obtained from [www.microchipdirect.com](http://www.microchipdirect.com))
- 16 Megabit (2 Mb x 8) serial Flash memory for additional data storage
- Display connector for interfacing with different display boards
- PICtail™ Plus interface for connecting to Explorer 16 Development Board
- Starter Kit connector

## Getting Started

A Starter Kit or an Explorer 16 Development Board (DM240001) is required, but only one should be used. An external 9V (AC162039) power supply can be connected through the Explorer 16 Development Board or directly to connector J5. When a Starter Kit is used, the setup can be powered via the USB debugger. If your USB device cannot supply enough power, the external power supply should be used. Finally, a display board, such as the Graphics Display Truly 3.2" 240x320 Board (AC164127-5), should be connected to the display connector.

Several board settings can be selected:

- Jumper Pins 1-2: These pins set the board for internal memory mode. In this mode an 8 BPP color signal is sent to the LCD using internal SRAM memory from the PIC.
- Jumper Pins 2-3: These pins set the board for external memory mode. In this mode a 16 BPP color signal is sent to the LCD using external 8 Megabit SRAM (512 x 16) memory found on the board

The LCC Graphics PICtail™ Plus Daughter Board can be used in conjunction with the Microchip Graphics Library. The Microchip Graphics Library and other firmware examples can be downloaded from the Low-Cost Controllerless Graphics Website found on [www.microchip.com](http://www.microchip.com). Please refer to the “Getting Started” topic in the Microchip Graphics Library Help at this location to program and run demonstration projects.

A different display board may also be available; please check [www.microchip.com/graphics](http://www.microchip.com/graphics) for available options. If an end designer chooses to develop a custom display board, the included schematic shows the details of signal connections. Please note that a different display may require modifications to the software provided with the Microchip Graphics Library to function properly.

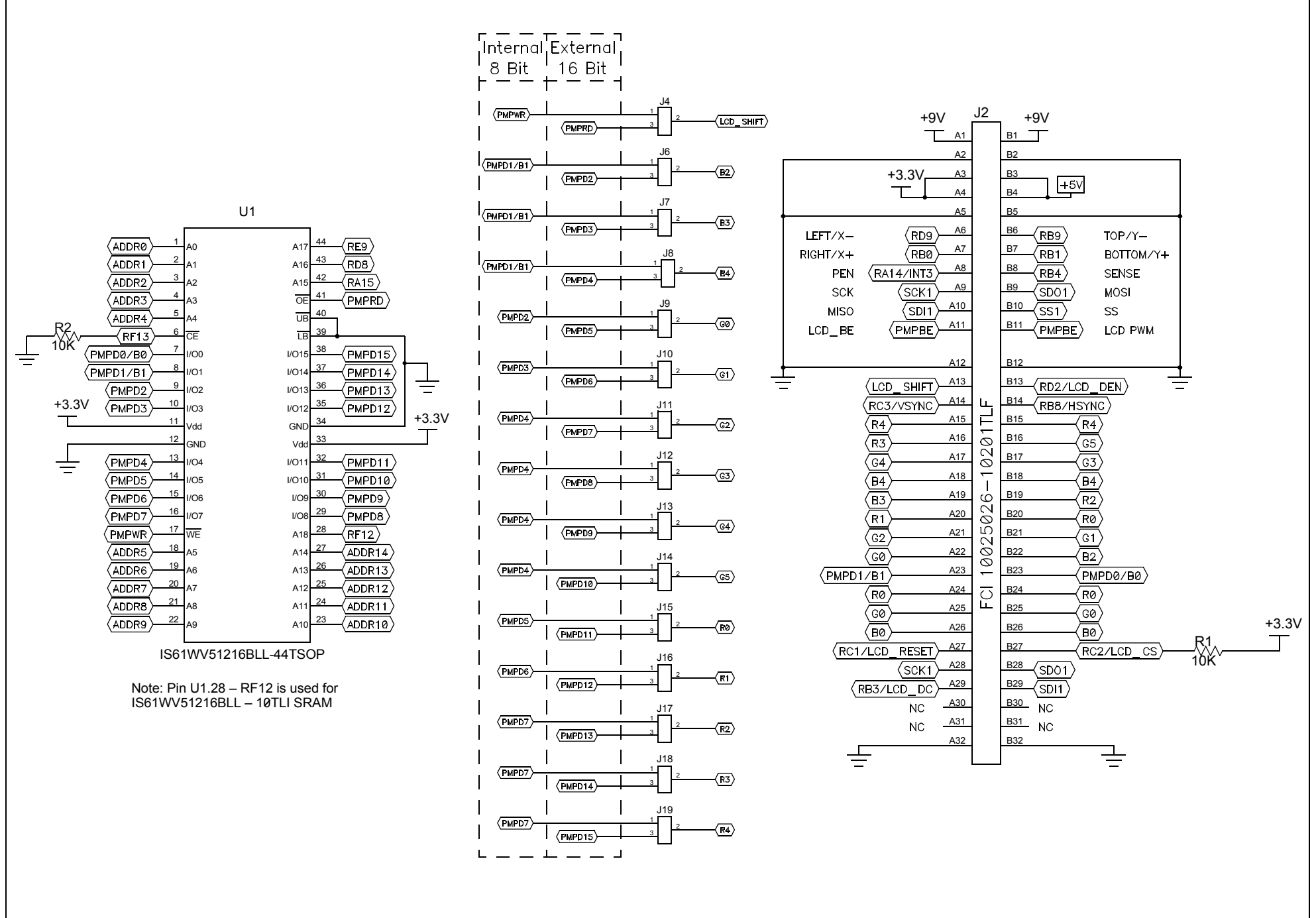
**Note:** It is the user's responsibility to obtain a copy of, be fully familiar with, and comply to the requirements and licensing obligations applicable to third-party tools, systems and/or specifications. This includes, but is not limited to, Flash-based media and FAT file systems available from the SD Association, the MultiMediaCard Association (MMCA) and Microsoft® Corporation.

TABLE 1: SIGNAL INTERFACE FOR DISPLAY CONNECTOR

Pin No.	Symbol	Level	Description
A1, B1	+9V	+9.0V	Power supply
A2, B2	GND	GND	Ground
A3, A4	+3.3V	+3.3V	Power supply
B3, B4	+5V	+5.0V	Power supply
A5, B5	GND	GND	Ground
A6	LEFT/X-	I/O	Touch panel left
B6	TOP/Y-	I/O	Touch panel top
A7	RIGHT/X+	I/O	Touch panel right
B7	BOTTOM/Y+	I/O	Touch panel bottom
A8	PEN	I	Pen interrupt (touch panel driver)
B8	SENSE	I	5-wire touch panel sense
A9	SCK	O	PIC® MCU SPI Synchronous Serial Clock (SCK)
B9	SDO	O	PIC MCU SPI Data Out (SDO)
A10	SDI	I	PIC MCU SPI Data In (SDI)
B10	SS	O	PIC MCU SPI Slave Synchronization (SS)
A11	BKLHT_EN	O	Enable for backlight driver
B11	BKLHT_PWM	O	PWM output for backlight driver
A12, B12	GND	GND	Ground
A13	SHIFT	O	Pixel shift signal
B13	DEN	O	Data enable for 24-bit digital RGB interface

# Low-Cost Controllerless (LCC) Graphics PICtail™ Plus Daughter Board Information Sheet

## Schematic (Sheet 1 of 2)



# Low-Cost Controllerless (LCC) Graphics PICtail™ Plus Daughter Board Information Sheet

## Schematics (Sheet 2 of 2)

