

# High-Performance WQVGA Display Module with maXTouch<sup>®</sup> Information Sheet

The High-Performance WQVGA Display Module with maXTouch (AC320005-4) is designed for evaluating the Microchip graphics display solution and graphics library for 32-bit microcontrollers. This board is compatible with Multimedia Expansion Board II (DM320005-2), as well as with Xplained Pro and Xplained Ultra. This board has a TFT 480 x 272 display with 24-bit parallel RGB interface with maXTouch capacitive touch interface.

## Features

- 480 x 272 TFT display
- maXTouch MXT336
- QTouch<sup>®</sup> QT1070 (with four navigation keys)
- 4 K-bit 1-wire EEPROM
- Integrated Projective Capacitive Touch (PCAP) panel

## Running the High-Performance WQVGA Display Module with maXTouch Demonstration Code

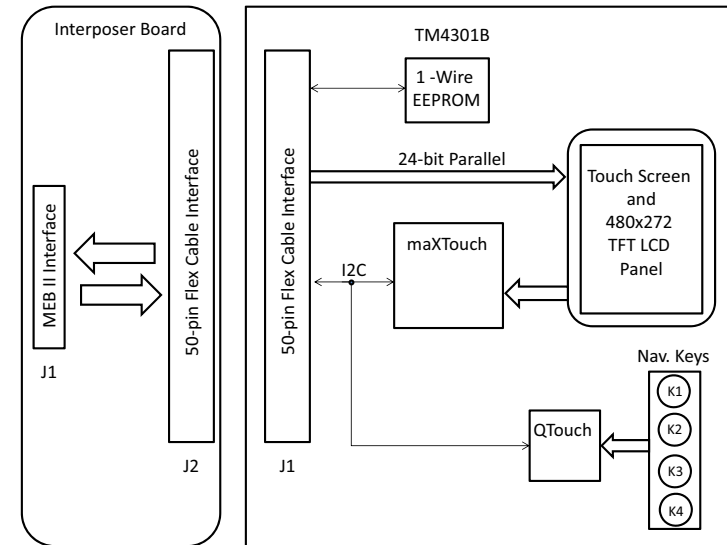
For free Microchip demonstration code and additional information, please visit the MPLAB<sup>®</sup> Harmony web page at: [www.microchip.com/Harmony](http://www.microchip.com/Harmony).

After MPLAB Harmony is installed, refer to the following MPLAB Harmony installation folder for the demonstration purpose:

C:\microchip\harmony\\apps\gfx.

To work with older Xplained Pro and Xplained Ultra development boards, disconnect the ribbon connector from the adapter board and connect it to the GFX port (50 flex) of the Xplained Pro or Xplained Ultra.

**FIGURE 1: WQVGA DISPLAY MODULE BLOCK DIAGRAM**



### Americas

Atlanta - 678-957-9614  
 Austin - 512-257-3370  
 Boston - 774-760-0087  
 Chicago - 630-285-0071  
 Cleveland - 216-447-0464  
 Dallas - 972-818-7423  
 Detroit - 248-848-4000  
 Houston - 281-894-5983  
 Indianapolis - 317-773-8323  
 Los Angeles - 949-462-9523  
 New York - 631-435-6000  
 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 - 86-10-8569-2100

### Asia/Pacific (Continued)

China - Chengdu - 86-28-8665-5511  
 China - Chongqing - 86-23-8980-9588  
 China - Hangzhou - 86-571-8792-8115  
 China - Hong Kong SAR - 852-2943-5100  
 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 - 86-755-8864-2200  
 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 - 91-20-3019-1500  
 Japan - Osaka - 81-6-6152-7160  
 Japan - Tokyo - 81-3-6880-3770  
 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 - 886-3-5778-366  
 Taiwan - Kaohsiung - 886-7-213-7840  
 Taiwan - Taipei - 886-2-2508-8600  
 Thailand - Bangkok - 66-2-694-1351

01/11/17



**MICROCHIP**

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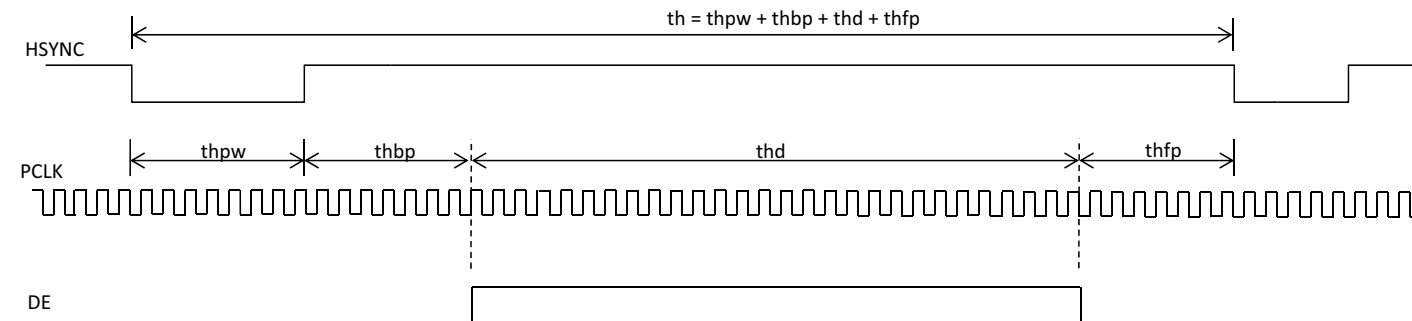
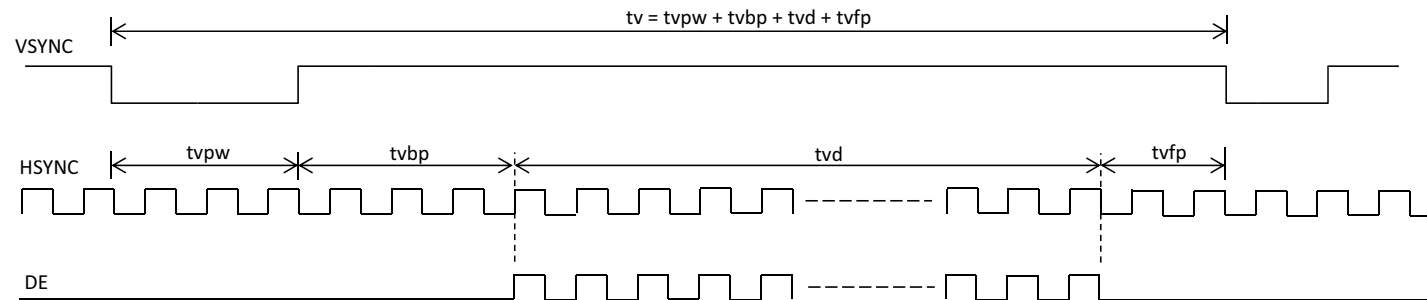
DS50002627B



# High-Performance WQVGA Display Module with maXTouch® Board Timing Specifications

**TABLE 1: TIMING SPECIFICATION VALUES**

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Clock Cycle	1/PCLK	-	9	15	MHz
Hsync Cycle	1/th	-	17.14	-	kHz
Vsync Cycle	1/tv	-	59.94	-	Hz
<b>Horizontal Signals</b>					
Horizontal Cycle	th	525	525	605	CLK
Horizontal Display Period	thd	480	480	480	CLK
Horizontal Front Porch	thfp	2	2	82	CLK
Horizontal Pulse width	thpw	2	41	41	CLK
Horizontal Back Porch	thbp	2	2	41	CLK
<b>Vertical Signals</b>					
Vertical Cycle	tv	285	286	399	Hsync
Vertical Display Period	tvd	272	272	272	Hsync
Vertical Front Porch	tvfp	1	2	227	Hsync
Vertical Pulse Width	tvpw	1	10	11	Hsync
Vertical Back Porch	tvbp	1	2	11	Hsync

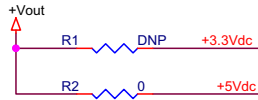


## Bottom Contacts Use Type 1 FFC

### Xplained Interface

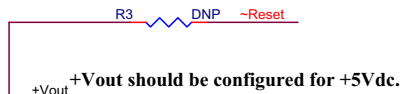
1	ONE WIRE
2	GND
3	LCDDAT0
4	LCDDAT1
5	LCDDAT2
6	LCDDAT3
7	GND
8	LCDDAT4
9	LCDDAT5
10	LCDDAT6
11	LCDDAT7
12	GND
13	LCDDAT8
14	LCDDAT9
15	LCDDAT10
16	LCDDAT11
17	GND
18	LCDDAT12
19	LCDDAT13
20	LCDDAT14
21	LCDDAT15
22	GND
23	LCDDAT16
24	LCDDAT17
25	LCDDAT18
26	LCDDAT19
27	GND
28	LCDDAT20
29	LCDDAT21
30	LCDDAT22
31	LCDDAT23
32	GND
33	PCLK
34	VSYNC
35	HSYNC
36	DE
37	SCK
38	MOSI
39	MISO
40	~SS
41	DISP
42	SDA
43	SCL
44	~CHG mxt
45	~CHG QT
46	LCD_PWM
47	~Reset IN
48	+Vout
49	+Vout
50	GND

CON50



~CHG\_QT is connected to Pin 53 for future use if desired.

SCK, MOSI, MISO and ~SS are connected to Pins 54, 56, 58 and 57 (respectively) for future use if desired.

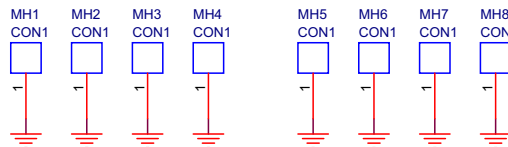


## Debug Header

1	GND
2	~CHG QT
3	~CHG mxt
4	SCL
5	SDA
6	DE
7	HSYNC
8	VSYNC
9	PCLK
10	GND

CON10

## Mounting Holes



## MEB II Interface

GND	1	2	GND
GND	3	4	GND
+3.3Vdc	5	6	+3.3Vdc
LCDDAT12	7	8	LCDDAT8
LCDDAT13	9	10	LCDDAT9
LCDDAT14	11	12	LCDDAT10
LCDDAT15	13	14	LCDDAT11
LCDDAT16	15	16	LCDDAT0
LCDDAT17	17	18	LCDDAT1
LCDDAT18	19	20	LCDDAT2
LCDDAT19	21	22	LCDDAT3
LCDDAT20	23	24	LCDDAT4
GND	25	26	GND
+3.3Vdc	27	28	+3.3Vdc
LCDDAT21	29	30	LCDDAT5
LCDDAT22	31	32	LCDDAT6
LCDDAT23	33	34	LCDDAT7
PCLK	35	36	ONE WIRE
VSYNC	37	38	HSYNC
DE	39	40	
~CHG mxt	41	42	SCL
	43	44	SDA
LCD_PWM	45	46	DISP
GND	47	48	GND
+5Vdc	49	50	+5Vdc
~CHG QT	51	52	SCK
~Reset	53	54	MOSI
~SS	55	56	MISO
GND	57	58	GND
	59	60	

DF12 (3.0)-60DS-05V (86)

ONE\_WIRE is connected to Pin 38 for future use if desired.

Microchip "LCD\_CS" is not used by PDA LCD interface

Microchip "LCD\_Reset" is connected to PDA "DISP". When DISP is low the LCD is in standby mode. When DISP is high the LCD is in normal display mode.

Should we connect Microchip "LCD\_CS" to PDA "DISP"