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Revision history

Rev.	Date	By	Summary	Remark
1.0	2015/12/01	Ken Hsu	New release	
1.1	2016/01/22	Ken Hsu	EMC certification Level modified Correct item 3.3 Interface pin definition	
1.2	2016/10/18	Ken Hsu	Add item 2.4 Firmware Resolution	
1.3	2016/11/18	Ken Hsu	Correct item 3.2 Touch line pin definition	
1.4	2017/11/03	Ken Hsu	1. Correct item 2.0 Sampling rate ,change the unit from sps to Hz 2. Add item 2.0 Response time 3. Correct item 3.1 Mechanical size	

1.0 Introduction

The PenMount PM2203B control board is a high specification (Projected Capacitive Input, PCI) touch panel controller product introduced by PenMount. The PenMount PM2203B can be applied in the consumer, commercial and the industrial fields.

The PenMount PM2203B provides three types of interfaces, USB, UART and I²C and supports PCI touch panels sized from 5" to 7.9". PenMount PM2203B also supports a wide range of operating systems such as Windows and Linux.

The PenMount PM2203B was developed based on Microchip microprocessors and is paired with PenMount's in-house hardware design and firmware algorithmic mechanism. It provides high performance computing and possesses excellent anti-noise capabilities.

2.0 Specifications

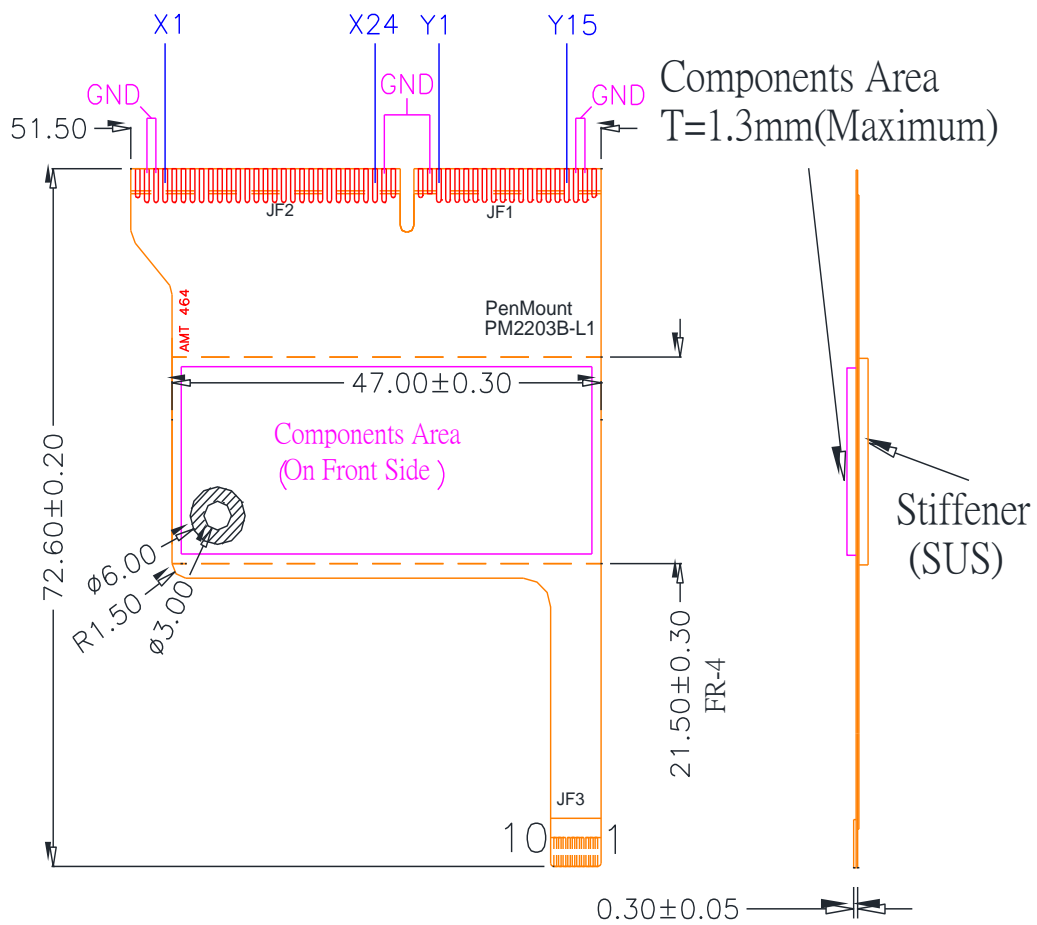
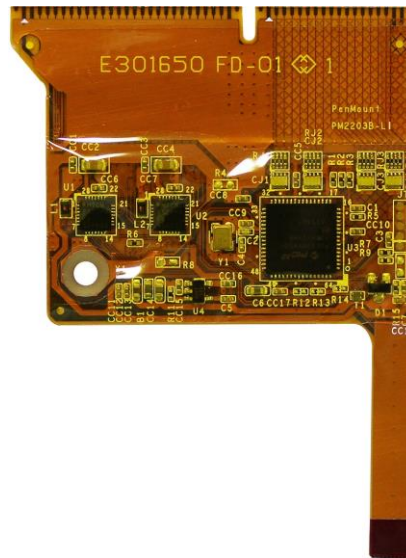
Parameter		feature
Controller part number		PenMount P2-06
Number of sensing line		15
Number of driving line		24
Supporting projected capacitive touch panel size		Projected capacitive type, from 5" to 7.9"
Interface	USB	Full-speed, 12Mbps
	UART	38400 baud rate / 8bit data / non parity / one stop bit / non-PnP
	I ² C	Slave, support 100 / 400 kHz specifications
ADC resolution		10bits (Typical)
Firmware resolution		2048 x 2048 (Typical)
Response time		Average < 30ms
Sampling rate	One point	150 Hz(Typical)
	Five points	100 Hz(Typical)
Operating voltage		+3.3Vdc ~ +5Vdc, ±5 %
Power consumption	Working mode	46.2mA @ 5Vdc (Typical)
	Idle mode	17.9mA @ 5Vdc (Typical)
	Sleep mode	2.7mA @ 5Vdc (Typical)
Operating temperature		-40°C ~ +85°C
Storage temperature		-40°C ~ +85°C
Relative humidity range		95% RH at 60°C. RH Non-condensing
EMS specification	RS	IEC61000-4-3 Level 3 , Criteria A
	CS	IEC61000-4-6 Level 3 , Criteria A
Watchdog Timer		Support WDT function through firmware programming

Note :

CS and RS performance, Power consumption and sample rate will vary according to different firmware versions.

3.0 Mechanical drawing

3.1 Mechanical size



3.2 Touch line pin definition

JF1			
Pin	Description	Pin	Description
1	GND	11	Cap Sense Y5
2	Cap Sense Y14	12	Cap Sense Y4
3	Cap Sense Y13	13	Cap Sense Y3
4	Cap Sense Y12	14	Cap Sense Y2
5	Cap Sense Y11	15	Cap Sense Y1
6	Cap Sense Y10	16	Cap Sense Y0
7	Cap Sense Y9	17	GND
8	Cap Sense Y8	18	GND
9	Cap Sense Y7		
10	Cap Sense Y6		

JF2			
Pin	Description	Pin	Description
1	GND	15	Cap Drive X12
2	GND	16	Cap Drive X13
3	Cap Drive X0	17	Cap Drive X14
4	Cap Drive X1	18	Cap Drive X15
5	Cap Drive X2	19	Cap Drive X16
6	Cap Drive X3	20	Cap Drive X17
7	Cap Drive X4	21	Cap Drive X18
8	Cap Drive X5	22	Cap Drive X19
9	Cap Drive X6	23	Cap Drive X20
10	Cap Drive X7	24	Cap Drive X21
11	Cap Drive X8	25	Cap Drive X22
12	Cap Drive X9	26	Cap Drive X23
13	Cap Drive X10	27	GND
14	Cap Drive X11		

3.3 Interface pin definition

PM2203B includes USB/I²C/UART communication interfaces, intends to maximize application flexibility and reliability, and minimizes cost through elimination of external components.

When interface setting of Firmware is auto-detection, user can select interface by Pin8 and Pin9. Please follow hardware setting as table 1 to assign interface.

JF3				
PIN NO.	SYMBOL	PIN ASSIGNMENT		
		USB	I ² C	UART
1	VCC	VCC	VCC	VCC
2	D-	D-	N.C.	N.C.
3	D+	D+	N.C.	N.C.
4	GND	Ground	Ground	Ground
5	SCL / RXD	N.C.	SCL	RXD
6	SDA / TXD	N.C.	SDA	TXD
7	nRESET	N.C.	N.C.	N.C.
8	nDETECT	N.C.	Low*	Low*
9	nINT	N.C.	nINT	Low*
10	N/A	N.C.	N.C.	N.C.

Table 1. Interface pin assignment

Note:

- (1) N.C. is No Connection
- (2) * means the setting of the interface selection. Leave these pins unconnected when the interface setting of firmware is fixed

Pin Name	Type	Description	Min	Typ	Max	Unit
VCC	P	Positive power supply	3.3	5		V
GND	P	Ground		0		V
D-	I/O	D- pin of internal USB transceiver		3.3		V
D+	I/O	D+ pin of internal USB transceiver		3.3		V
SCL	I/O	Serial data line for I ² C. Open drain requires external pull-up to 3.3V.		3.3		V
SDA	I/O	Serial clock line for I ² C. Open drain requires external pull-up to 3.3V		3.3		V
RXD	I	UART receive		3.3		V
TXD	O	UART transmit		3.3		V
nRESET	I	Open-drain and active low to reset PM2203B and must be driven low for 5 μ s (typical) to be valid. Leave the pin unconnected if not used.				V
nDETECT	I	Pull low when selecting I ² C or UART interface		0		V
nINT	O	Processor Interrupt. This pin is active low, open drain requires external pull-up to 3.3V.		3.3		V
N/A		Not applied				V

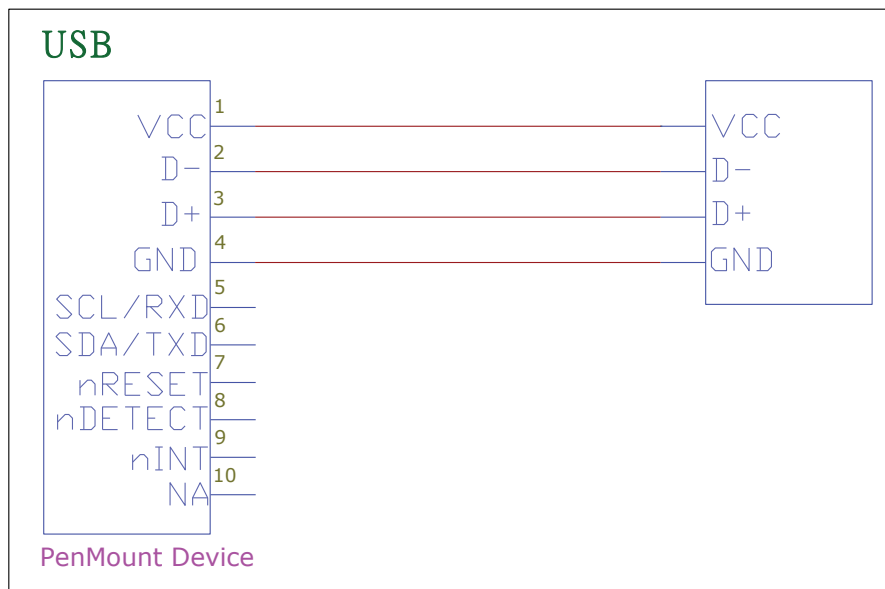


Figure 1. USB interface

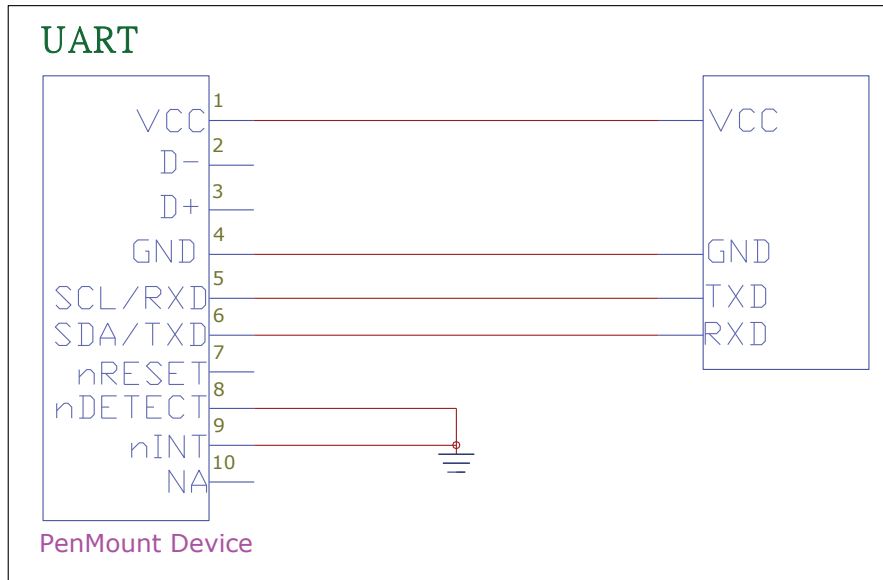


Figure 2. UART interface

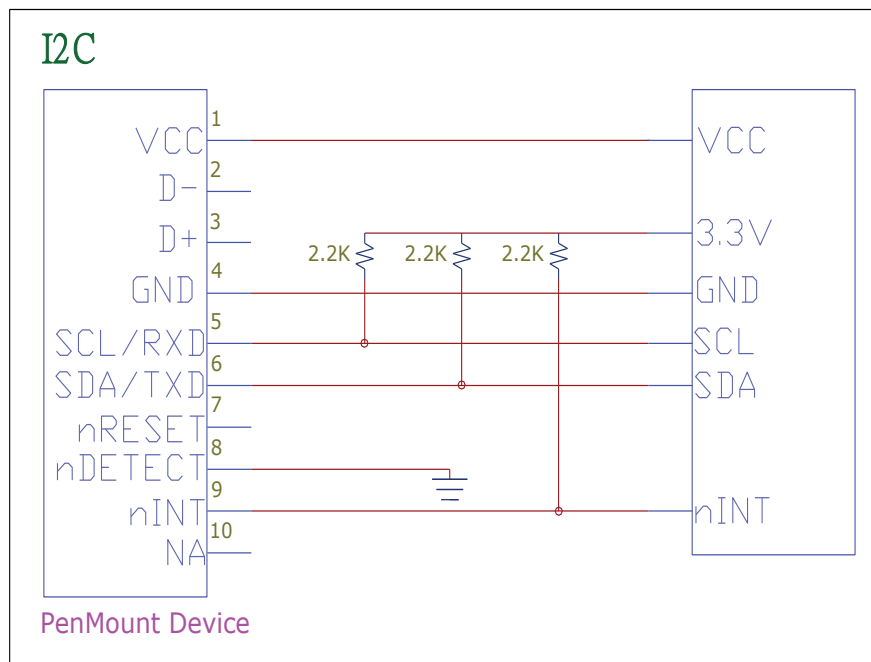


Figure 3. I²C interface

4.0 Drivers and Utilities

4.1 Drivers

For I²C:

- Windows CE : Provide binary driver for freescale iMX platform. Other platform by request.
- Linux / Android : Provide source code for integration.

For USB and UART

- Windows 2000, XP, 2003: single touch, mouse driver.
- Windows Vista: single touch, inbox driver.
- Windows 7,8,10: multi touch, Inbox driver.
- Linux: Ubuntu, Android, other Linux distributions under development.

(Provide source code for integration if any)

4.2 Utilities

Firmware adjustment utility allows user to fine tune the touch panel sensitivity.

Note:

All drivers and utilities are available on PenMount websites. Please contact us for further information.

5.0 Others

5.1 ROHS compliance

This control board is ROHS compliant

5.2 EMC protection recommendations

Please refer to PCI touch screen integration guides.

5.3 Noise Protection

To achieve good noise interference protection capabilities, PenMount requires paired interface cables possess comprehensive EMI shielding.