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## Revision History

Rev.	Date	By	Summary	Remark
1.0	2015.09.16	Kenhsu	New Release	
1.1	2015/12/22	Ken Hsu	Operation temperature modified	
1.2	2016/03/11	Ken Hsu	Correct item 3.2 Interface pin definition	
1.3	2.016/05/11	Ken Hsu	Correct item 2.10 Operating temperature Add item 2.12 Operating or Storage Humidity Range Add item 2.5 Firmware Resolution	

## 1.0 Product

The PenMount PM1210 control board is a high specification (Projected Capacitive Input, PCI) touch panel controller product introduced by PenMount. The PenMount PM1210 can be applied in the consumer, commercial and industrial fields.

The PenMount PM1210 provides four types of interfaces, USB、I<sup>2</sup>C、UART and RS232 and supports PCI touch panels sized from 5" to 7.9". The PenMount PM1210 also supports a wide range of operating systems such as Windows and Linux.

The PenMount PM1210 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.

There are four connectors on this board: 50 Pins ZIF connectors for PCI touch screen FPC cables, one USB connector for 4-pin USB cable (optional), and one I<sup>2</sup>C/UART connector for 7-pin I<sup>2</sup>C/UART cable (optional), and one RS232 connector for 5-pin RS232 cable (optional)

## 2.0 Specifications

- 2.1 Controller part no: P2-06 x1
- 2.2 Supported Projected Capacitive touch panel size: 5" to 7.9"
- 2.3 Interface: USB, I<sup>2</sup>C, UART, RS-232  
USB, Full-speed, 12Mbps  
UART, RS-232 Interface 38400 baud rate / 8bit data / non parity / one stop bit / non-PnP  
I<sup>2</sup>C, Slave, support 400 kHz specifications
- 2.4 ADC resolution: 10bits
- 2.5 Firmware Resolution: 2048 x 2048 (Typical)
- 2.6 Max Touch Line : 24 Driving lines, 15 Sensing line
- 2.7 Sampling rate: >160 sps (Single)
- 2.8 Operation Voltage Vcc: +5V, ±5%
- 2.9 Power Consumption: Typical -- Working Mode: 41.0mA / 5V DC  
Idle Mode: 23.5mA / 5V DC  
Sleep Mode: 2.9mA / 5V DC
- 2.10 Operating temperature: -40°C ~ +85°C
- 2.11 Storage temperature: -40°C ~ +85°C
- 2.12 Relative Humidity Range: 95% RH at 60°C. RH Non-condensing.
- 2.13 RS specification: IEC61000-4-3 Level 3, Criteria A (For 1.8mm Top Glass, Dual touch)
- 2.14 CS specification: IEC61000-4-6 Level 3, Criteria A (For 1.8mm Top Glass, Dual touch)

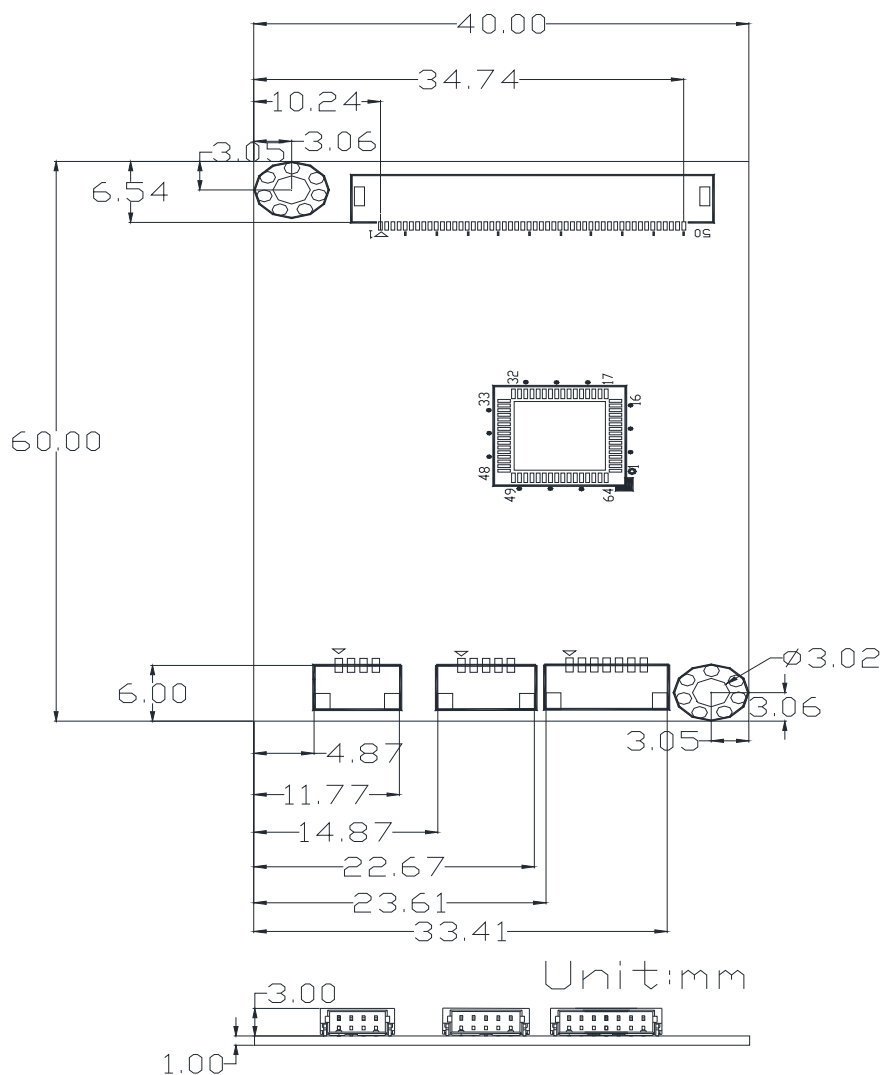
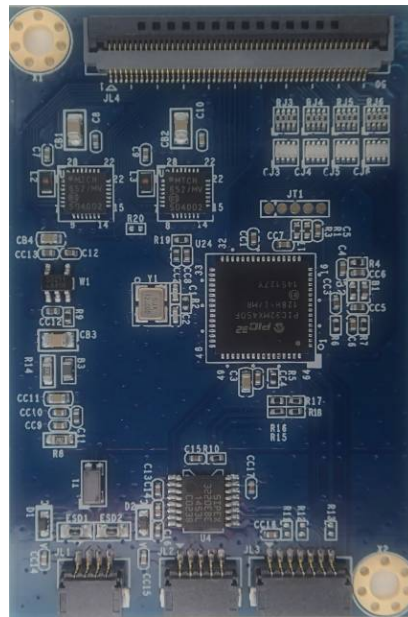
Note :

Power consumption and sample rate will vary according to different firmware versions.

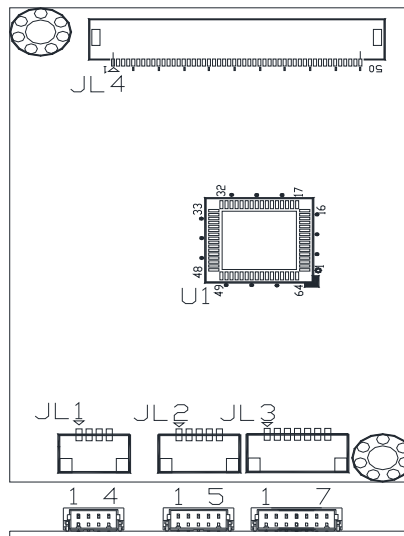
# PenMount PM1210 PCI Controller Board Data Sheet

## 3.0 Mechanical Drawing

### 3.1 Mechanical size



### 3.2 Interface detection and pin definition



JL1 / 4PIN / USB ACES 50224-00401-001	
PIN NO.	DESIGNATION
1	V <sub>CC</sub> (USB5V)
2	D-
3	D+
4	Ground

JL2 / 5PIN / RS232 ACES 50224-00501-001	
PIN NO.	DESIGNATION
1	V <sub>CC</sub> (5V)
2	RXD
3	TXD
4	Ground
5	Ground

JL3 / 7PIN / I <sup>2</sup> C / UART ACES 50224-00701-001				
PIN NO.	DESIGNATION	I <sup>2</sup> C	UART	Remark
1	V <sub>CC</sub> (5V)	v	v	
2	Ground	v	v	
3	SCL,RXD	v	v	Support voltage level of 3.3V
4	SDA,TXD	v	v	Support voltage level of 3.3V
5	Reset	Float	Float	Pull Low at least 2 μs to reset the P2-06 device
6	Detect	N.C	Low	
7	INTHM	v	N.C	

Note. V: Connection / N.C: No Connection

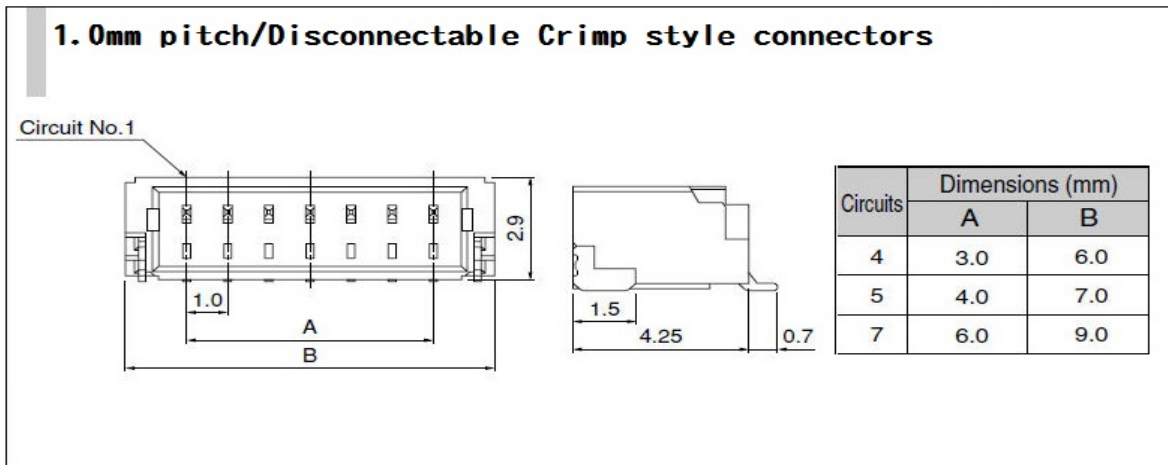
PM1210 supports the single interface cable connection.

If you use I<sup>2</sup>C interface, please add pull-up resistor 2.2K at SCL / SDA / INTHM on Host side.

### 3.3 Touch line pin definition

JL4 50Pin ZIF , PH 0.5mm ; HRS FH52-50S-05SH							
PIN	Description	PIN	Description	PIN	Description	PIN	Description
1	Ground	14	Cap Drive X10	27	Cap Drive X23	40	Cap Sense Y6
2	Ground	15	Cap Drive X11	28	NC	41	Cap Sense Y5
3	NC	16	Cap Drive X12	29	Ground	42	Cap Sense Y4
4	Cap Drive X0	17	Cap Drive X13	30	Ground	43	Cap Sense Y3
5	Cap Drive X1	18	Cap Drive X14	31	NC	44	Cap Sense Y2
6	Cap Drive X2	19	Cap Drive X15	32	Cap Sense Y14	45	Cap Sense Y1
7	Cap Drive X3	20	Cap Drive X16	33	Cap Sense Y13	46	Cap Sense Y0
8	Cap Drive X4	21	Cap Drive X17	34	Cap Sense Y12	47	NC
9	Cap Drive X5	22	Cap Drive X18	35	Cap Sense Y11	48	NC
10	Cap Drive X6	23	Cap Drive X19	36	Cap Sense Y10	49	NC
11	Cap Drive X7	24	Cap Drive X20	37	Cap Sense Y9	50	Ground
12	Cap Drive X8	25	Cap Drive X21	38	Cap Sense Y8		
13	Cap Drive X9	26	Cap Drive X22	39	Cap Sense Y7		

### 3.4 Connector specifications



## 4.0 Drivers, Utilities

### 4.1 Drivers:

For I<sup>2</sup>C:

Windows CE : By request.

Linux / Android : Provide source code for integration.

For USB

Windows 2000, XP, 2003: single touch, mouse driver.

Windows Vista: single touch, inbox driver.

Windows 7,8,10: 5 touches support, Inbox driver.

Linux: inbox driver after kernel 3.0, provide source code for kernel 2.6

For UART / RS-232

Windows 2000, XP, 2003: single touch, mouse driver.

Windows Vista: single touch, digitizer driver.

Windows 7,8,10: 5 touches support, digitizer driver.

Linux: inbox driver after kernel 3.2, provide source code for kernel 2.6

### 4.2 Utility:

Firmware adjustment utility is ready for user to fine tune the touch panel sensitivity.

Notes :

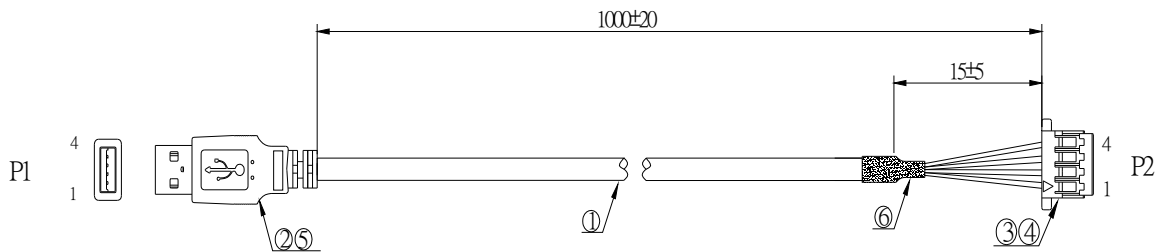
Drivers, Utilities : all drivers are available on AMT and PenMount websites. PenMount utilities are also available, please contact us

5.0 Others

5.1 ROHS compliance: This control board is ROHS compliant

5.2 For EMC protection recommendations, please refer to PCI touch screen integration guides.

5.3 To achieve good noise interference protection capabilities, PenMount requires paired interface cables possess comprehensive EMI shielding. The following is an USB cable interface diagram as reference.



PIN ASSIGNMENT

Color	PIN ASSIGNMENT		NO.	Description	Q'TY
	P1	P2			
RED	1	1	⑥	HEAT SHRINK TUBE:φ4.0mm L=10mm BLACK	1PC
WHITE	2	2	⑤	OUTER MOLDED PVC 4SP COLOR:BLACK OR EQU	15g
GREEN	3	3	④	HOUSING: KY-1001HS-04P OR EQU	15g
BLACK	4	4	③	TERMINAL: KY-1001TPS-20 OR EQU	1PC
	GND	GND CASE	②	USB A(M):PIN G/F Plastic:Black Case Nickel-plated OD:4.5	1PC
			①	CABLE:UL2725 #28*1P+#28*2C+ADB(80% Al-MgBraid) OD:3.5 Black L=1040MM	1PC

Remark:

1. Test Conditions

a. Conductor Resistance:2Ω

b. Insulation Resistance:10MΩ

c. Insulation Testing:DC 300V

*Remark: Specifications are subject to change without notice*