PenMount PM1710 PCI Controller Board Data Sheet

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Revision history

Rev.	Date	By	Summary	Remark
1.0	2014/10/01	Ken Hsu	1. New release	
1.1	2014/11/21	Ken Hsu	1. Add EMC certification data 2. Modify Operation temperature	
1.2	2015/1/6	Ken Hsu	1. Add 5.3 USB cable diagram	
1.3	2015/03/03	Ken Hsu	1. Add MTBF data added	
1.4	2015/12/16	Ken Hsu	1. Modify Operation temperature	
1.5	2016/03/11	Ken Hsu	1. Correct item 3.3 Interface pin definition	
1.6	2.016/05/11	Ken Hsu	1. Correct item 2.10 Operating temperature 2. Add item 2.12 Operating or Storage Humidity Range 3. Add item 2.5 Firmware Resolution	
1.7	2016/11/18	Ken Hsu	1. Correct item 3.3 Interface pin definition 2. Delete item 2.15 MTBF 3. Add item 2.15 Watchdog Timer	
1.8	2017/03/03	Ken Hsu	1. Correct item 2.0 Sampling rate ,change the unit from sps to Hz 2. Add item 2.0 Response time	

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1.0 Introduction

The PenMount PM1710 control board is a high specification (Projected Capacitive Input, PCI) touch panel controller product introduced by PenMount. The PenMount PM1710 can be applied in the consumer, commercial and industrial fields.

The PenMount PM1710 provides two types of interfaces, USB、RS232 and supports PCI touch panels sized from 15.6" to 24". The PenMount PM1710 also supports a wide range of operating systems such as Windows and Linux.

 The PenMount PM1710 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: 80Pin & 50 Pins ZIF connectors for PCI touch screen FPC cables, one USB connector for 4-pin USB cable (optional) , and one RS232 connector for 5-pin RS232 cable (optional)

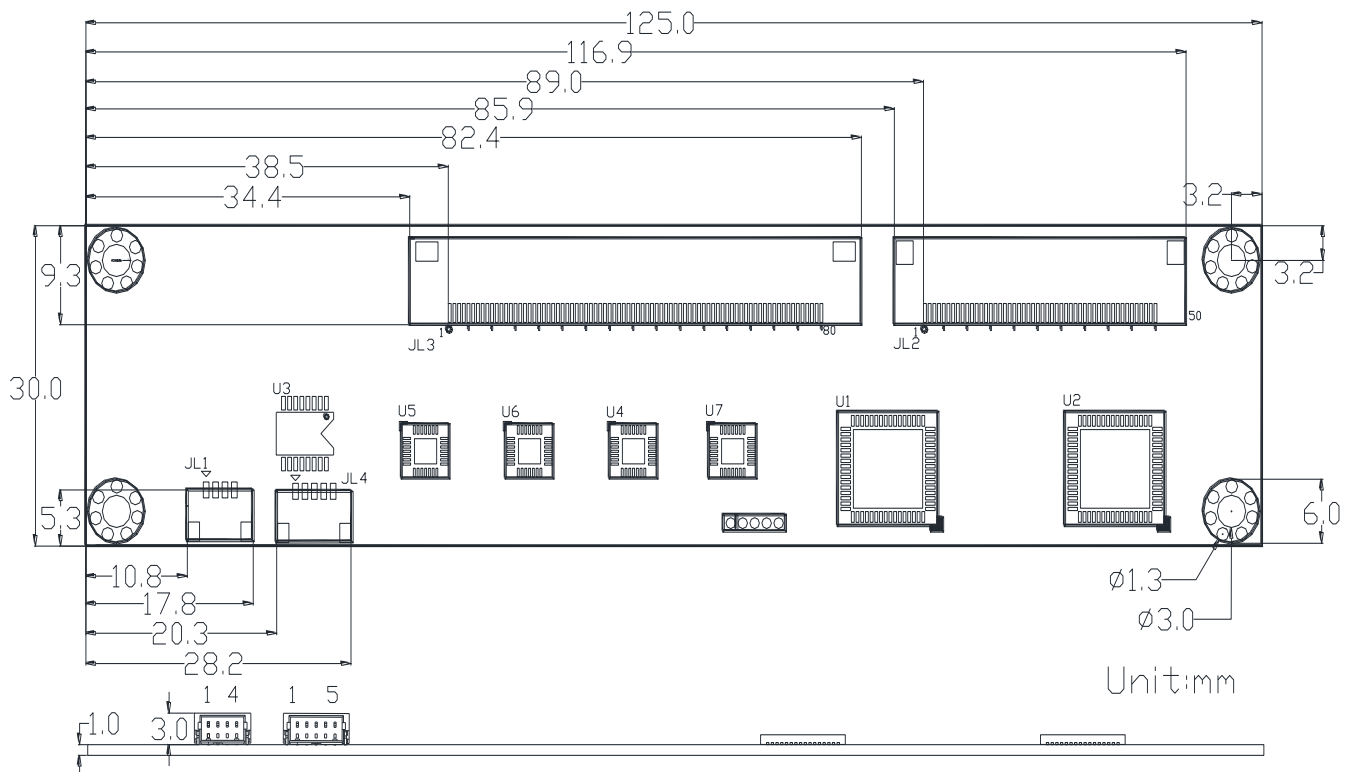# PenMount PM1710 PCI Controller Board Data Sheet

2.0 Specifications

Parameter		feature
Controller part number		PenMount P2-08 x 2pcs
Number of sensing line		44
Number of driving line		76
Supporting touch panel		Projected capacitive type, from 15.6" to 24"
Interface	USB	Full-speed, 12Mbps
	RS232	38400 baud rate / 8bit data / non parity / one stop bit / non-PnP
ADC resolution		10bits (Typical)
Firmware resolution		2048 x 2048 (Typical)
Response time		Average < 35ms
Sampling rate	1 finger touch	160 Hz(Typical)
	5 fingers touch	100 Hz(Typical)
Operating voltage		+5Vdc, ±5 %
Power consumption	Working mode	60.7mA @ 5Vdc
	Idle mode	47.1mA @ 5Vdc
	Sleep mode	1.6mA @ 5Vdc
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, dual touch points
	CS	IEC61000-4-6 Level 3 , Criteria A, dual touch points
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.

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3.0 Mechanical Drawing

3.1 Mechanical size

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3.2 Touch line pin definition

JL3 80Pin ZIF , PH 0.5mm ; HRS FH28H-80S-0.5SH

PIN	Description	PIN	Description	PIN	Description	PIN	Description
1	GND	21	Cap Drive X18	41	Cap Drive X38	61	Cap Drive X58
2	GND	22	Cap Drive X19	42	Cap Drive X39	62	Cap Drive X59
3	Cap Drive X0	23	Cap Drive X20	43	Cap Drive X40	63	Cap Drive X60
4	Cap Drive X1	24	Cap Drive X21	44	Cap Drive X41	64	Cap Drive X61
5	Cap Drive X2	25	Cap Drive X22	45	Cap Drive X42	65	Cap Drive X62
6	Cap Drive X3	26	Cap Drive X23	46	Cap Drive X43	66	Cap Drive X63
7	Cap Drive X4	27	Cap Drive X24	47	Cap Drive X44	67	Cap Drive X64
8	Cap Drive X5	28	Cap Drive X25	48	Cap Drive X45	68	Cap Drive X65
9	Cap Drive X6	29	Cap Drive X26	49	Cap Drive X46	69	Cap Drive X66
10	Cap Drive X7	30	Cap Drive X27	50	Cap Drive X47	70	Cap Drive X67
11	Cap Drive X8	31	Cap Drive X28	51	Cap Drive X48	71	Cap Drive X68
12	Cap Drive X9	32	Cap Drive X29	52	Cap Drive X49	72	Cap Drive X69
13	Cap Drive X10	33	Cap Drive X30	53	Cap Drive X50	73	Cap Drive X70
14	Cap Drive X11	34	Cap Drive X31	54	Cap Drive X51	74	Cap Drive X71
15	Cap Drive X12	35	Cap Drive X32	55	Cap Drive X52	75	Cap Drive X72
16	Cap Drive X13	36	Cap Drive X33	56	Cap Drive X53	76	Cap Drive X73
17	Cap Drive X14	37	Cap Drive X34	57	Cap Drive X54	77	Cap Drive X74
18	Cap Drive X15	38	Cap Drive X35	58	Cap Drive X55	78	Cap Drive X75
19	Cap Drive X16	39	Cap Drive X36	59	Cap Drive X56	79	NC
20	Cap Drive X17	40	Cap Drive X37	60	Cap Drive X57	80	GND

JL2 50Pin ZIF , PH 0.5mm ; HRS FH28D-50S-0.5SH

PIN	Description	PIN	Description	PIN	Description	PIN	Description	PIN	Description
1	GND	11	Cap Sense Y35	21	Cap Sense Y25	31	Cap Sense Y15	41	Cap Sense Y5
2	NC	12	Cap Sense Y34	22	Cap Sense Y24	32	Cap Sense Y14	42	Cap Sense Y4
3	Cap Sense Y43	13	Cap Sense Y33	23	Cap Sense Y23	33	Cap Sense Y13	43	Cap Sense Y3
4	Cap Sense Y42	14	Cap Sense Y32	24	Cap Sense Y22	34	Cap Sense Y12	44	Cap Sense Y2
5	Cap Sense Y41	15	Cap Sense Y31	25	Cap Sense Y21	35	Cap Sense Y11	45	Cap Sense Y1
6	Cap Sense Y40	16	Cap Sense Y30	26	Cap Sense Y20	36	Cap Sense Y10	46	Cap Sense Y0
7	Cap Sense Y39	17	Cap Sense Y29	27	Cap Sense Y19	37	Cap Sense Y9	47	NC
8	Cap Sense Y38	18	Cap Sense Y28	28	Cap Sense Y18	38	Cap Sense Y8	48	NC
9	Cap Sense Y37	19	Cap Sense Y27	29	Cap Sense Y17	39	Cap Sense Y7	49	NC
10	Cap Sense Y36	20	Cap Sense Y26	30	Cap Sense Y16	40	Cap Sense Y6	50	GND

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3.3 Interface pin definition

PM1710 includes USB/RS232 communication interfaces, intends to maximize application flexibility and reliability, and minimizes cost through elimination of external components.

JL1 / 4PIN / ACES 50224-00401-001							
PIN NO.	USB	Description	Min	Typ	Max	Unit	
1	VCC	Positive power supply		5		V	
2	D-	D- pin of internal USB transceiver		3.3		V	
3	D+	D+ pin of internal USB transceiver		3.3		V	
4	GND	Ground		0		V	
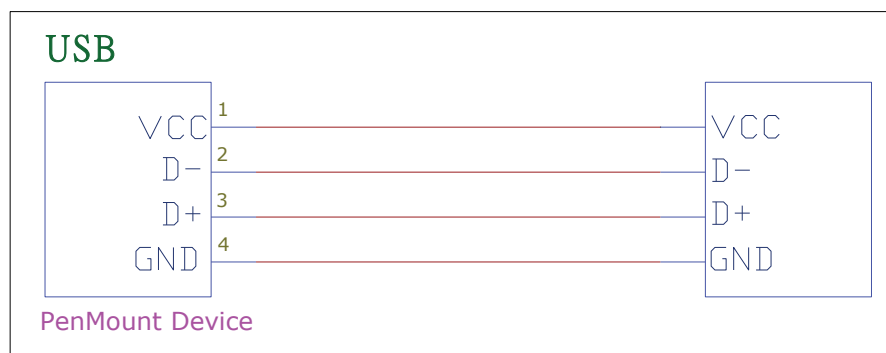
Figure1 USB interface

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PIN NO.	RS232	Description	Min	Typ	Max	Unit
JL4 / 5PIN / ACES 50224-00501-001						
1	VCC	Positive power supply		5		V
2	RXD	RS232 receive	-15		+15	V
		input threshold low	0.8	1.5		
		input threshold high		1.8	2.4	
3	TXD	RS232 transmit	-15		+15	V
		output threshold low			0.4	
		output threshold high	4.4	4.9		
4	GND	Ground		0		V
5	GND	Ground		0		V
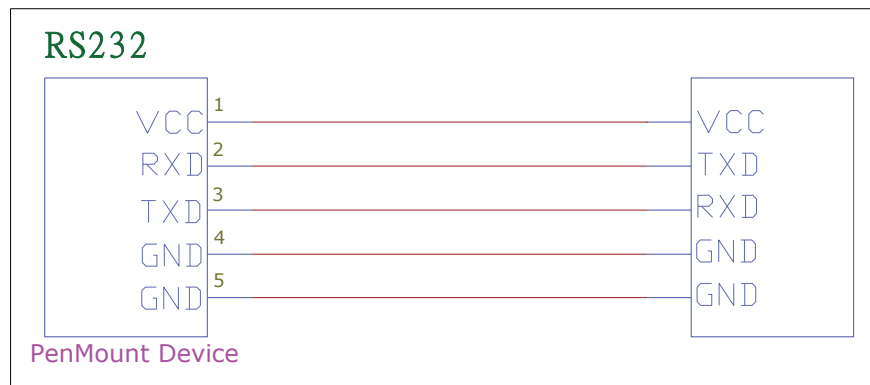
Figure2 RS232 interface

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3.4 Connector specifications

1.0mm pitch/Disconnectable Crimp style connectors

Circuit No.1

Circuits	Dimensions (mm)	
	A	B
4	3.0	6.0
5	4.0	7.0
7	6.0	9.0

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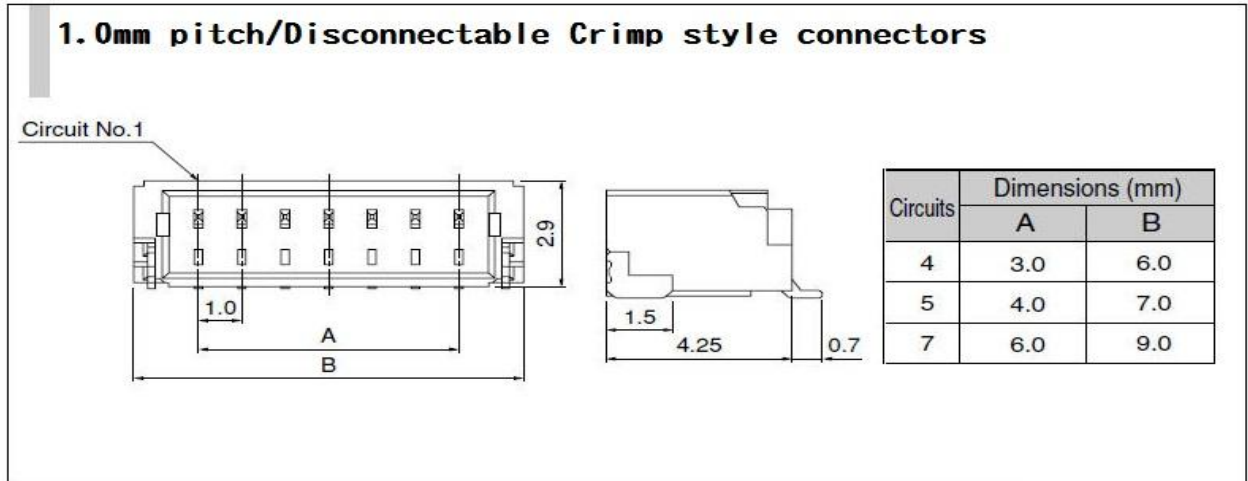
4.0 Drivers and utilities

4.1 Drivers

For USB

- Windows 2000, XP, 2003: single touch, mouse driver.
- Windows Vista: single touch, inbox driver.
- Windows 7,8,10: five touch, Inbox driver.
- Linux: Ubuntu, Android, other versions of Linux support, please refer PenMount website

For 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

(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.

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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.

The cable should have a woven or spirally copper shield with 360 ^{o} shield coverage
The shield must be terminated to the receptacle and be connected to ground plane carefully.

Below is an example for 4-pin USB cable diagram. For other implementation, please follow the same design rules.