# PenMount PM1210 PCI Controller Board Data Sheet

## 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、I²C、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 I²C/UART connector for 7-pin I²C/UART cable (optional) , and one RS232 connector for 5-pin RS232 cable (optional)
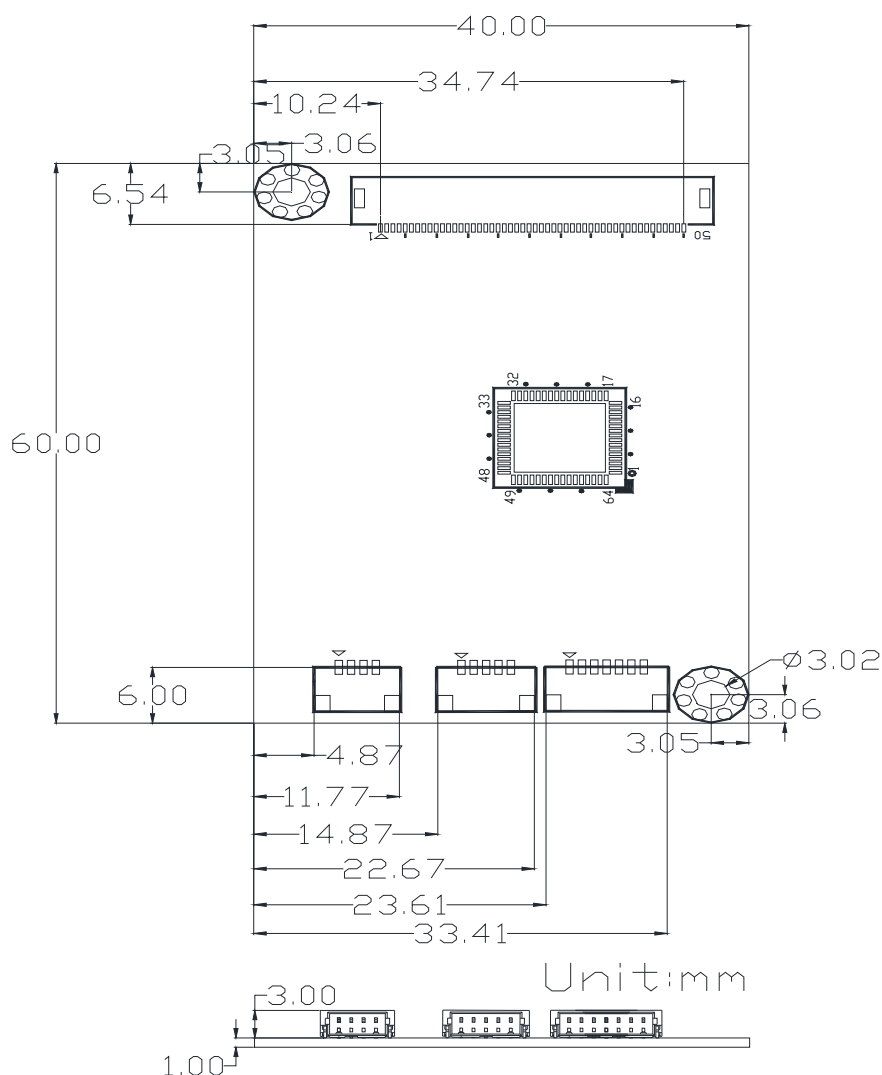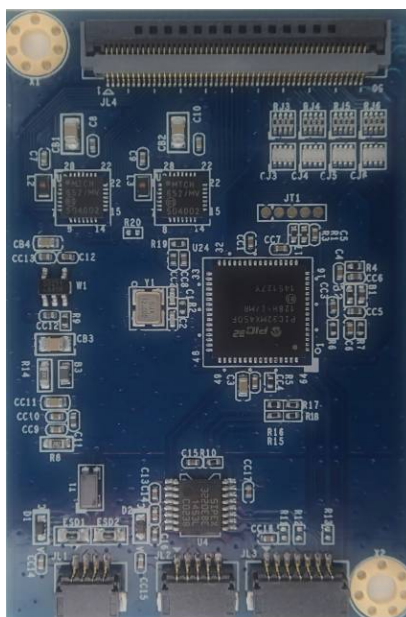
## 2.0 Specifications

2.1    Controller part no: P2-06 x1

2.2    Supported Projected Capacitive touch panel size: 5" to 7.9"

2.3    Interface: USB, I²C, UART, RS-232

   USB,Full-speed, 12Mbps

   UART,RS-232 Interface 38400 baud rate / 8bit data / non parity / one stop bit / non-PnP

   I²C,Slave, support 400 kHz specifications

2.4    ADC resolution: 10bits

2.5    Max Touch Line : 24 Driving lines, 15 Sensing line

2.6    Sampling rate: >160 sps (Single)

2.7    Operation Voltage Vcc: +5V, ±5%

2.8    Power Consumption: Typical -- Working Mode:   41.0mA / 5V DC

   Idle Mode:   23.5mA / 5V DC

   Sleep Mode:   2.9mA / 5V DC

2.9    Operating temperature: -30°C ~ +85°C

2.10    Storage temperature: -40°C ~ +85°C

2.11    RS specification: IEC61000-4-3 Level 3 ,Criteria A (For 1.8mm Top Glass, Dual touch)

2.12    CS specification: IEC61000-4-6 Level 3 ,Criteria A (For 1.8mm Top Glass, Dual touch)
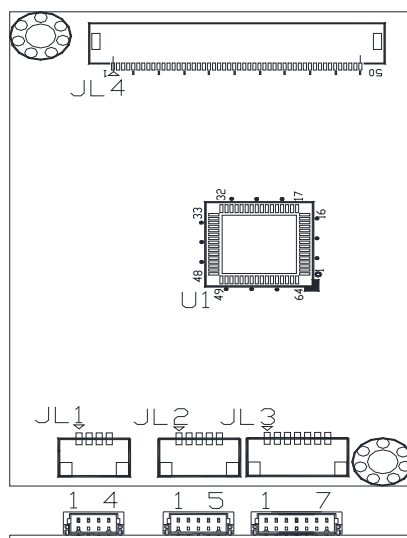
Power consumption and sample rate will vary according to different firmware versions.

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## 3.0 Mechanical Drawing

### 3.1 Mechanical size



Unit:mm

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## 3.2 Interface detection and pin definition



| JL1 / 4PIN / USB ACES 50224-00401-001 | |
|---|---|
| PIN NO. | DESIGNATION |
| 1 | $V_{cc}$ (USB5V) |
| 2 | D- |
| 3 | D+ |
| 4 | Ground |

| JL2 / 5PIN / RS232 ACES 50224-00501-001 | |
|---|---|
| PIN NO. | DESIGNATION |
| 1 | $V_{cc}$ (5V) |
| 2 | RXD |
| 3 | TXD |
| 4 | Ground |
| 5 | Ground |

| JL3 / 7PIN / I²C / UART ACES 50224-00701-001 | | | | |
|---|---|---|---|---|
| PIN NO. | DESIGNATION | I²C | UART | Remark |
| 1 | $V_{cc}$ (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 I²C interface, please add pull-up resistor 2.2K at SCL / SDA / INTHM on Host side.

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### 3.3 Touch line pin definition

| PIN | Description | PIN | Description | PIN | Description | PIN | Description |
|-----|-------------|-----|-------------|-----|-------------|-----|-------------|
| JL4 50Pin ZIF , PH 0.5mm ; HRS FH52-50S-05SH ||||||||
| 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

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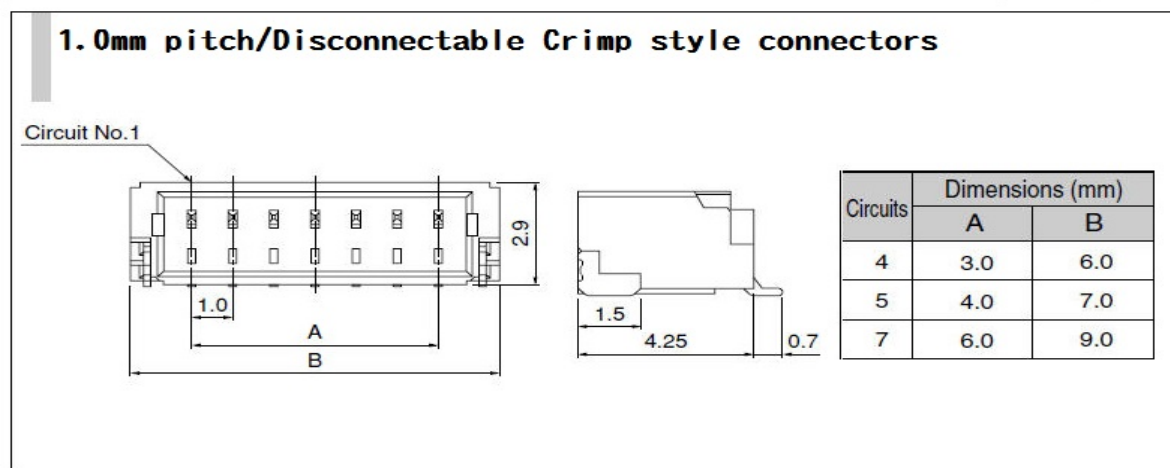
4.0 Drivers, Utilities

    4.1 Drivers:

        For I²C:

        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.
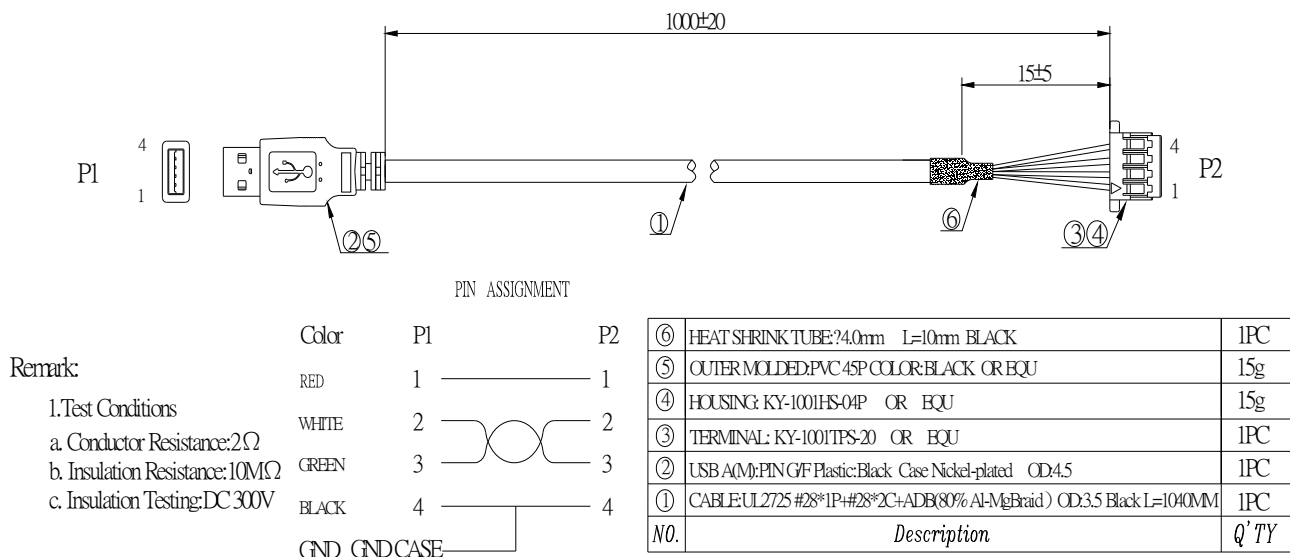
Notes :

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.

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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

Remark:

1.Test Conditions
a. Conductor Resistance:$2\Omega$
b. Insulation Resistance:$10M\Omega$
c. Insulation Testing:DC 300V

| Color | P1 | P2 |
|-------|-----|-----|
| RED | 1 | 1 |
| WHITE | 2 | 2 |
| GREEN | 3 | 3 |
| BLACK | 4 | 4 |
| GND | GND CASE | |

| ⑥ | HEAT SHRINK TUBE:?4.0mm   L=10mm BLACK | 1PC |
|---|------------------------------------------|-----|
| ⑤ | OUTER MOLDED:PVC 45P COLOR:BLACK OR EQU | 15g |
| ④ | HOUSING: KY-1001HS-04P   OR   EQU | 15g |
| ③ | TERMINAL: KY-1001TPS-20   OR   EQU | 1PC |
| 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 |
| NO. | *Description* | *Q'TY* |

*Remark: Specifications are subject to change without notice*