



# **PenMount PM1540 PCAP Control Board Datasheet**

Version 1.0  
2021/10/28

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**Revision history**

Rev.	Date	By	Summary	Remark
1.0	2021/10/28	Willi	New Release	

## 1.0 Introduction

The PenMount PM1540 control board is a high specification (Projected Capacitive Input, PCAP) touch panel controller product introduced by PenMount. The PenMount PM1540 can be applied in the consumer, commercial and the industrial fields.

The PenMount PM1540 provides USB and I<sup>2</sup>C interfaces and supports PCAP touch panels sized from 12.1" to 15.6". PenMount PM1540 also supports a wide range of operating systems such as Windows and Linux.

## 2.0 Specifications

Parameter	feature	
Controller part number	PenMount K1-02	
Number of sensing line	56	
Number of driving line	36	
Supporting projected capacitive touch panel size	Projected capacitive type, from 12.1" to 15.6"	
Interface	USB	12Mbps full-speed and 1.5Mbps low-speed
	I <sup>2</sup> C	100kHz standard mode and 400kHz fast mode
Firmware resolution	16384 x 9600 (Typical)	
Response time	Average < 40ms	
Sampling rate	One point	110 Hz(Typical)
	Ten points	110 Hz(Typical)
Operating voltage	USB: 4.75~5.25Vdc I <sup>2</sup> C: 2.97~3.4Vdc	
Power consumption	Working mode	160mA @ 5Vdc (Typical)
	Idle mode	45mA @ 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

Note :

CS and RS performance, power consumption, response time and sample rate will vary according to different firmware versions and parameter settings.

### 3.0 Mechanical drawing

#### 3.1 Mechanical size

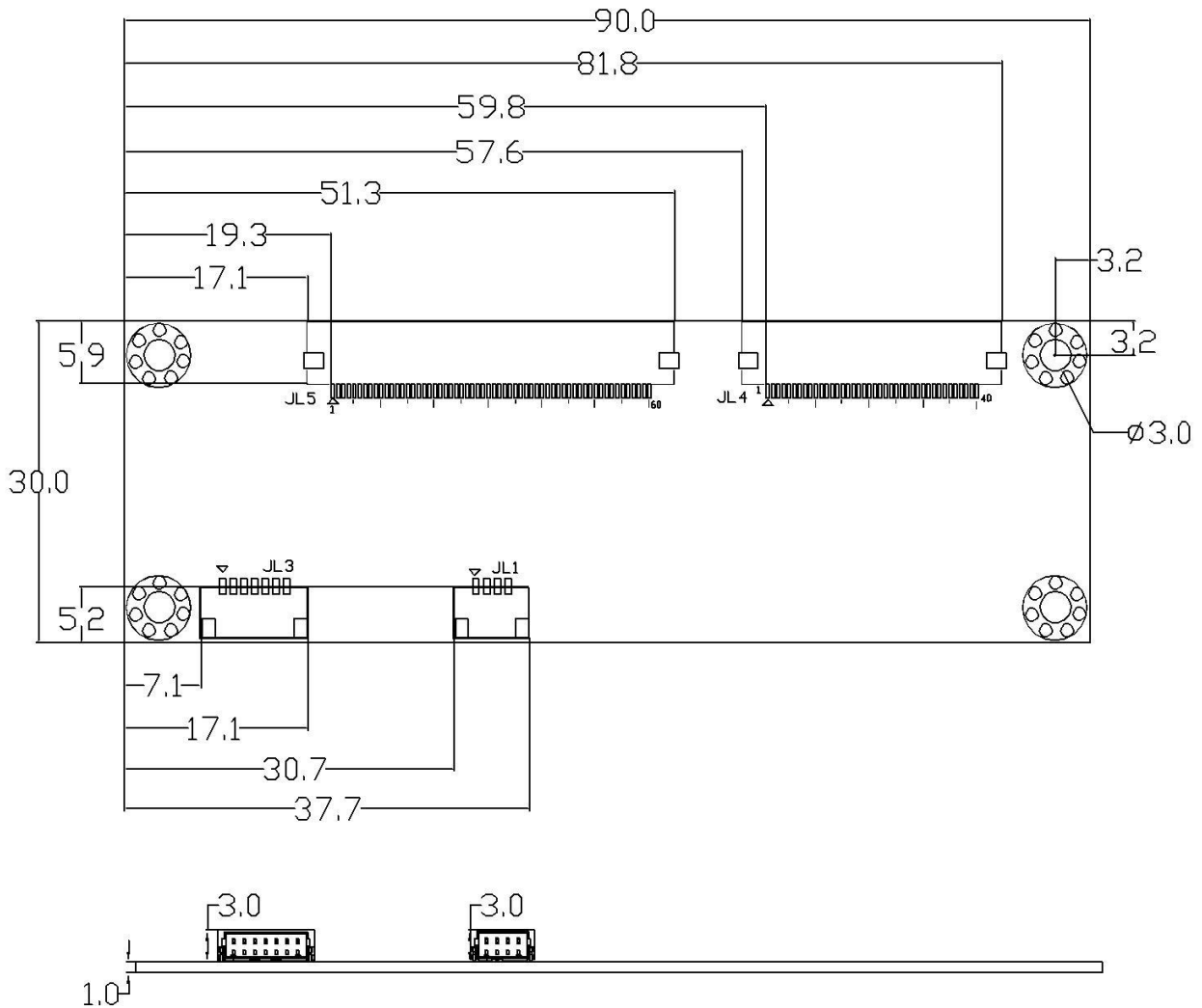
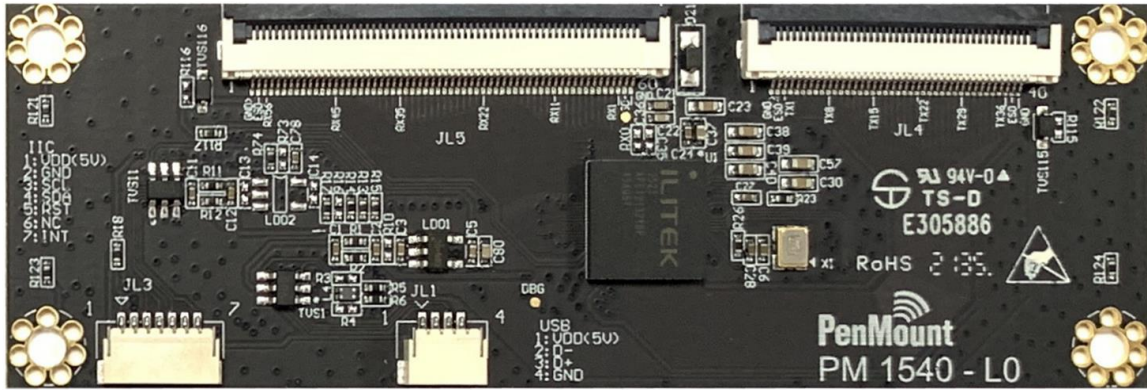


Figure 1 PM1540

## 3.2 Touch line pin definition

JL5 60Pin ZIF , PH 0.5mm ; F12260_HCC1APP							
PIN	Description	PIN	Description	PIN	Description	PIN	Description
1	System_GND	16	Rx42	31	Rx27	46	Rx12
2	Guard Ring	17	Rx41	32	Rx26	47	Rx11
3	Rx55	18	Rx40	33	Rx25	48	Rx10
4	Rx54	19	Rx39	34	Rx24	49	Rx9
5	Rx53	20	Rx38	35	Rx23	50	Rx8
6	Rx52	21	Rx37	36	Rx22	51	Rx7
7	Rx51	22	Rx36	37	Rx21	52	Rx6
8	Rx50	23	Rx35	38	Rx20	53	Rx5
9	Rx49	24	Rx34	39	Rx19	54	Rx4
10	Rx48	25	Rx33	40	Rx18	55	Rx3
11	Rx47	26	Rx32	41	Rx17	56	Rx2
12	Rx46	27	Rx31	42	Rx16	57	Rx1
13	Rx45	28	Rx30	43	Rx15	58	Rx0
14	Rx44	29	Rx29	44	Rx14	59	Guard Ring
15	Rx43	30	Rx28	45	Rx13	60	System_GND

JL4 40Pin ZIF , PH 0.5mm ; F12240-HCC1APP							
PIN	Description	PIN	Description	PIN	Description	PIN	Description
1	System_GND	11	Tx8	21	Tx18	31	Tx28
2	Guard Ring	12	Tx9	22	Tx19	32	Tx29
3	Tx0	13	Tx10	23	Tx20	33	Tx30
4	Tx1	14	Tx11	24	Tx21	34	Tx31
5	Tx2	15	Tx12	25	Tx22	35	Tx32
6	Tx3	16	Tx13	26	Tx23	36	Tx33
7	Tx4	17	Tx14	27	Tx24	37	Tx34
8	Tx5	18	Tx15	28	Tx25	38	Tx35
9	Tx6	19	Tx16	29	Tx26	39	Guard Ring
10	TX7	20	Tx17	30	Tx27	40	System_GND

### 3.3 Interface pin definition

PM1540 includes USB/I<sup>2</sup>C communication interfaces.

JL1 / 4PIN / WA2404-HD1100J						
PIN NO.	USB	Description	Min	Typ	Max	Unit
1	USB_5V	Positive power supply	4.75	5	5.25	V
2	D-	D- pin of internal USB transceiver		3.3		V
3	D+	D+ pin of internal USB transceiver		3.3		V
4	System_GND	Ground		0		V

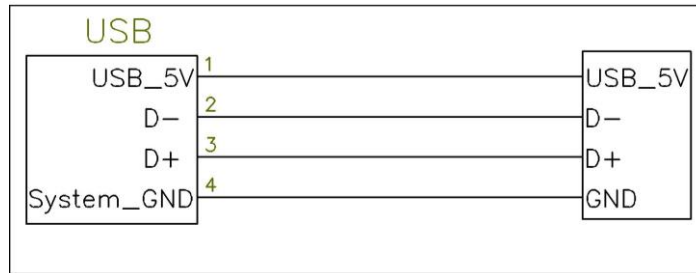


Figure2 USB interface

JL3 / 7PIN / WA2407-HD1100J						
PIN NO.	I <sup>2</sup> C	Description	Min	Typ	Max	Unit
1	VCC	Positive power supply	2.97	3.3	3.4	V
2	System_GND	Ground		0		V
3	SCL	Serial data line for I <sup>2</sup> C. Open drain requires external pull-up to 3.3V.		3.3		V
4	SDA	Serial clock line for I <sup>2</sup> C. Open drain requires external pull-up to 3.3V		3.3		V
5	nRESET	Chip reset signal. Normal: High, Active Reset: Low		3.3		V
6	NC					
7	nINT	Processor Interrupt. This pin is active low, open drain requires external pull-up to 3.3V.				V

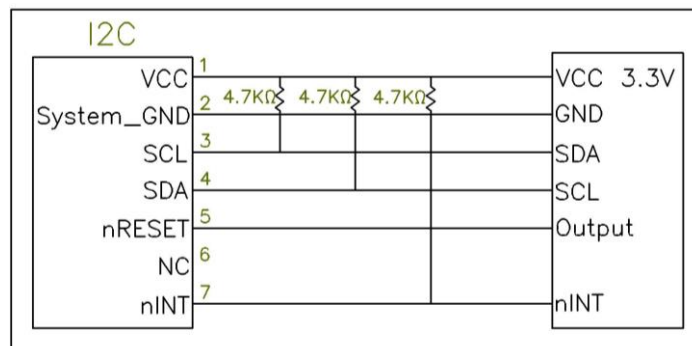
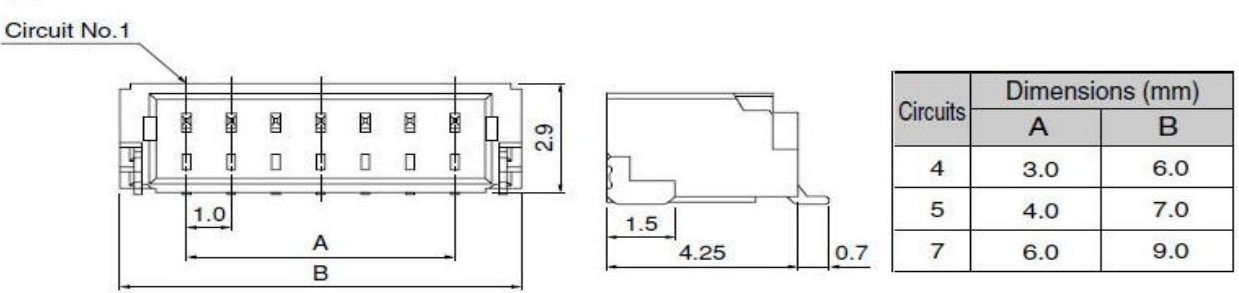


Figure3 I<sup>2</sup>C interface

### 3.4 Connector specifications

**1.0mm pitch/Disconnectable Crimp style connectors**



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

## 4.0 Drivers and Utilities

### 4.1 Drivers

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

- Windows 8,10: HID over I2C protocol.
- Linux / Android : provide source code for integration.

**For USB**

- Windows 7,8,10: multi touch, Inbox driver.
- Linux: inbox driver after kernel 3.0.8, provide source code for kernel 2.6.32 ~ 3.0.8.

Note:

Please contact us for further information.

### 4.2 Utilities

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

Note:

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 PCAP 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° 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.

