



PenMount PM2503A PCAP Control Board Datasheet

Version 1.1
2024/7/16

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Revision history

Rev.	Date	By	Summary	Remark
1.0	2022/5/4	Willi	New Release	
1.1	2024/7/16	Willi	Correct Item 1.0 introduction Add supporting I ² C interface	

1.0 Introduction

The PenMount PM2503A control board is a high specification (Projected Capacitive Input, PCAP) touch panel controller product introduced by PenMount. The PenMount PM2503A can be applied in the consumer, commercial and the industrial fields.

The PenMount PM2503A provides USB and I²C interfaces and supports PCAP touch panels sized from 3.5" to 7". PenMount PM2503A also supports a wide range of operating systems such as Windows and Linux.

2.0 Specifications

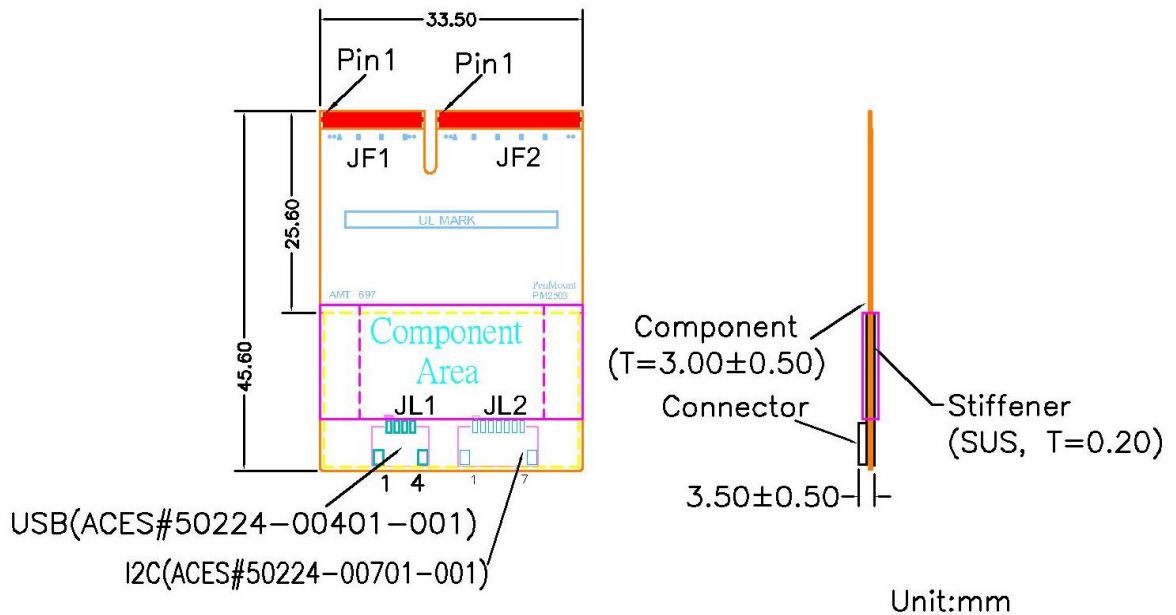
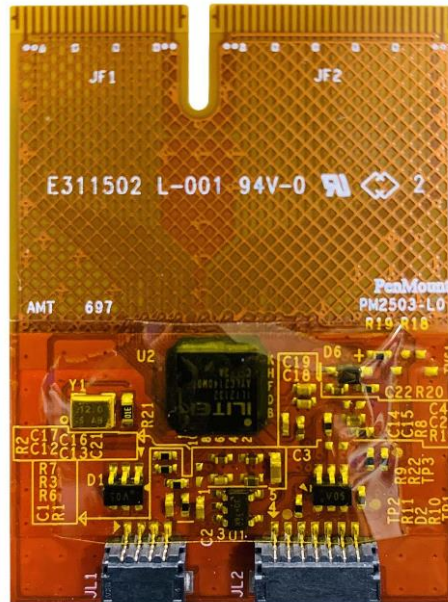
Parameter		feature
Controller part number		PenMount K1-03
Number of sensing line		24
Number of driving line		15
Supporting projected capacitive touch panel size		Projected capacitive type, from 3.5" to 7"
Interface	USB	12Mbps full-speed and 1.5Mbps low-speed
	I ² C	100kHz standard mode and 400kHz fast 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 ² C: 2.97~3.4Vdc
Power consumption	Working mode	85mA @ 5Vdc (Typical)
	Idle mode	40mA @ 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



3.2 Touch line pin definition

JF1							
1	NC	9	Rx18	17	Rx10	25	Rx2
2	System_GND	10	Rx17	18	Rx9	26	Rx1
3	Guard Ring	11	Rx16	19	Rx8	27	Rx0
4	Rx23	12	Rx15	20	Rx7	28	Guard Ring
5	Rx22	13	Rx14	21	Rx6	29	System_GND
6	Rx21	14	Rx13	22	Rx5	30	NC
7	Rx20	15	Rx12	23	Rx4		
8	Rx19	16	Rx11	24	Rx3		

JF2							
PIN	Description	PIN	Description	PIN	Description	PIN	Description
1	NC	7	Tx3	13	Tx9	19	Guard Ring
2	System_GND	8	Tx4	14	Tx10	20	System_GND
3	Guard Ring	9	Tx5	15	Tx11	21	NC
4	Tx0	10	Tx6	16	Tx12		
5	Tx1	11	Tx7	17	Tx13		
6	Tx2	12	Tx8	18	Tx14		

3.3 Interface pin definition

PM2503A includes USB/I²C 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	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

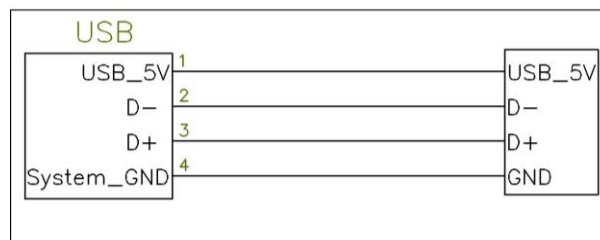


Figure1 USB interface

JL2 / 7PIN / ACES#50224-00701-001						
PIN NO.	I ² 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	SDA	Serial data line for I ² C. Open drain requires external pull-up to 3.3V.		3.3		V
4	SCL	Serial clock line for I ² C. Open drain requires external pull-up to 3.3V		3.3		V
5	INT	Processor Interrupt. This pin is active low, open drain requires external pull-up to 3.3V.				V
6	NC					
7	TP_EN	Chip reset signal. Normal: High, Active Reset: Low		3.3		V

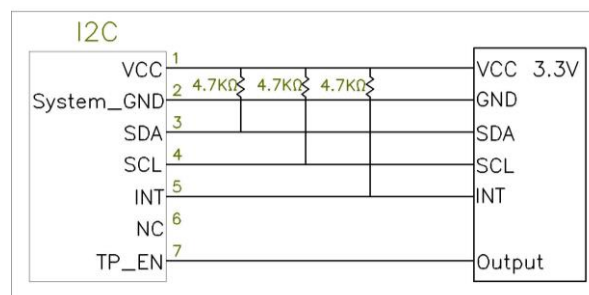
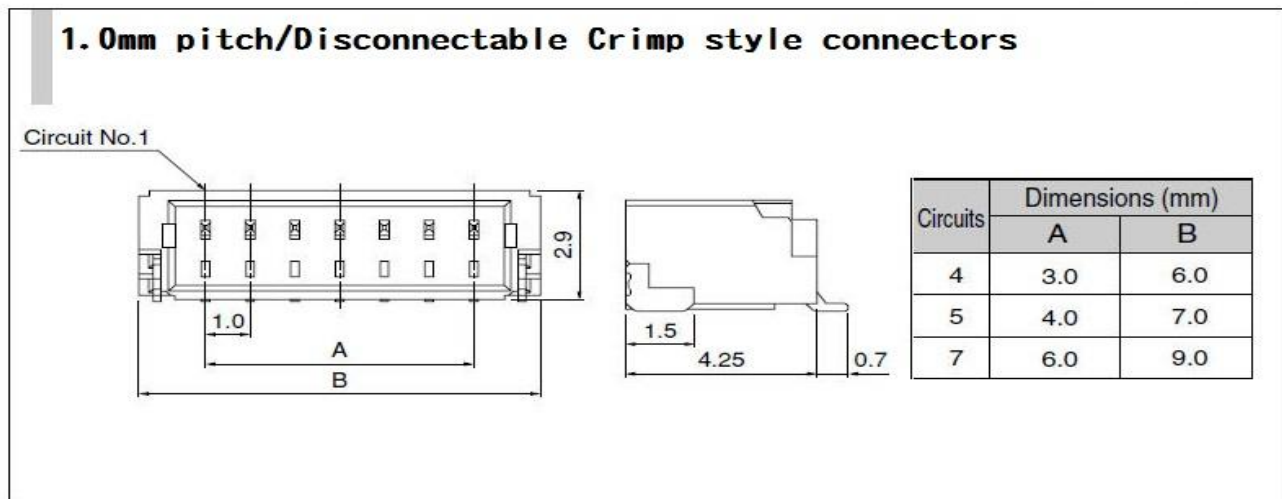


Figure2 I²C interface

3.4 Connector specifications



4.0 Drivers and Utilities

4.1 Drivers

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:

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 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.

