PenMount PenMount PM1715 Series PCI Controller Board Data Sheet

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Revision History

Rev.	Date	By	Summary	Remark
1.0	2017/1/20	Ken Hsu	1. New Release	
1.1	2017/3/13	Ken Hsu	1. Correct item 2.0 Sampling rate ,change the unit from sps to Hz 2. Add item 2.0 Response time 3. Correct item 3.3 Interface pin definition ,I2C SCL / SDA description	

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1.0   Introduction

The PenMount PM1715 series control board is a high specification (Projected Capacitive Input, PCI) touch panel controller product introduced by PenMount. The PenMount PM1715 series can be applied in the consumer, commercial and industrial fields.

The PenMount PM1715 series provides two types of interfaces, USB、I²C and supports PCI touch panels sized from 15.6" to 24".   The PenMount PM1715 series also supports a wide range of operating systems such as Windows and Linux.

The PenMount PM1715 series 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 three 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 I²C connector for 7-pin I²C cable (optional)

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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 (PM1715U)	Full-speed, 12Mbps
	I²C (PM1715I)	Slave, 400 kHz
ADC resolution		10bits (Typical)
Firmware resolution		2048 x 2048 (Typical)
Response time		Average < 35ms
Sampling rate	1 finger touch	150 Hz(Typical)
	5 fingers touch	100 Hz(Typical)
Operating voltage		+5Vdc, ±5 %
Power consumption	Working mode	83.5mA @ 5Vdc
	Idle mode	67.2mA @ 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.

Figure 1   PM1715U

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Figure 2   PM1715I

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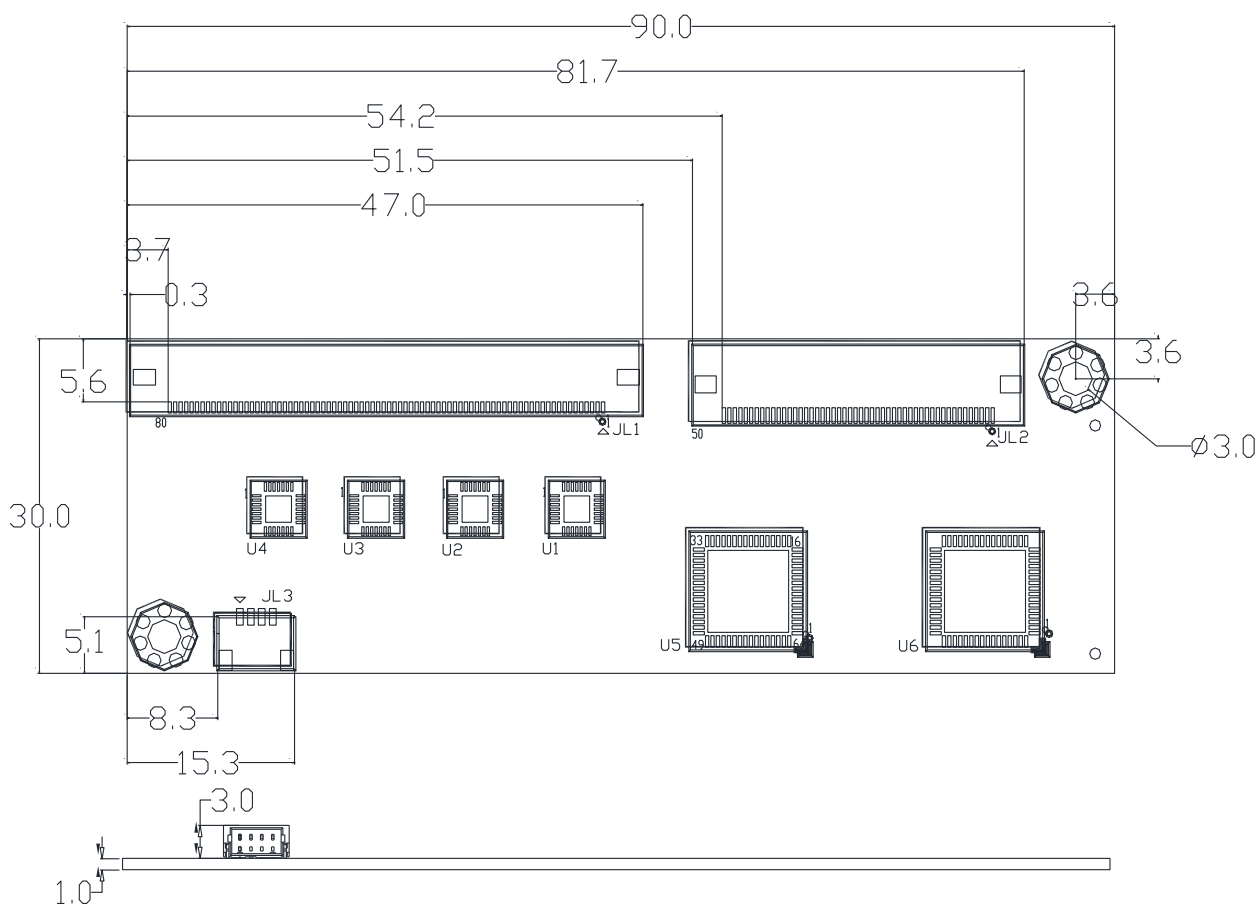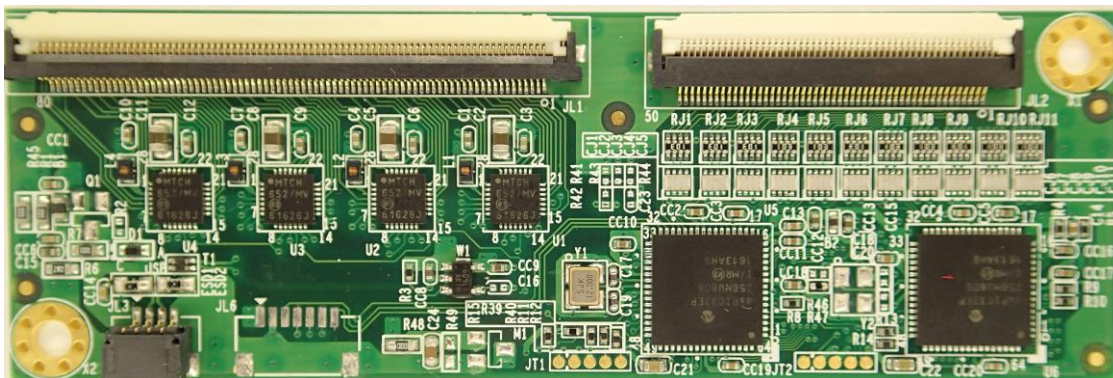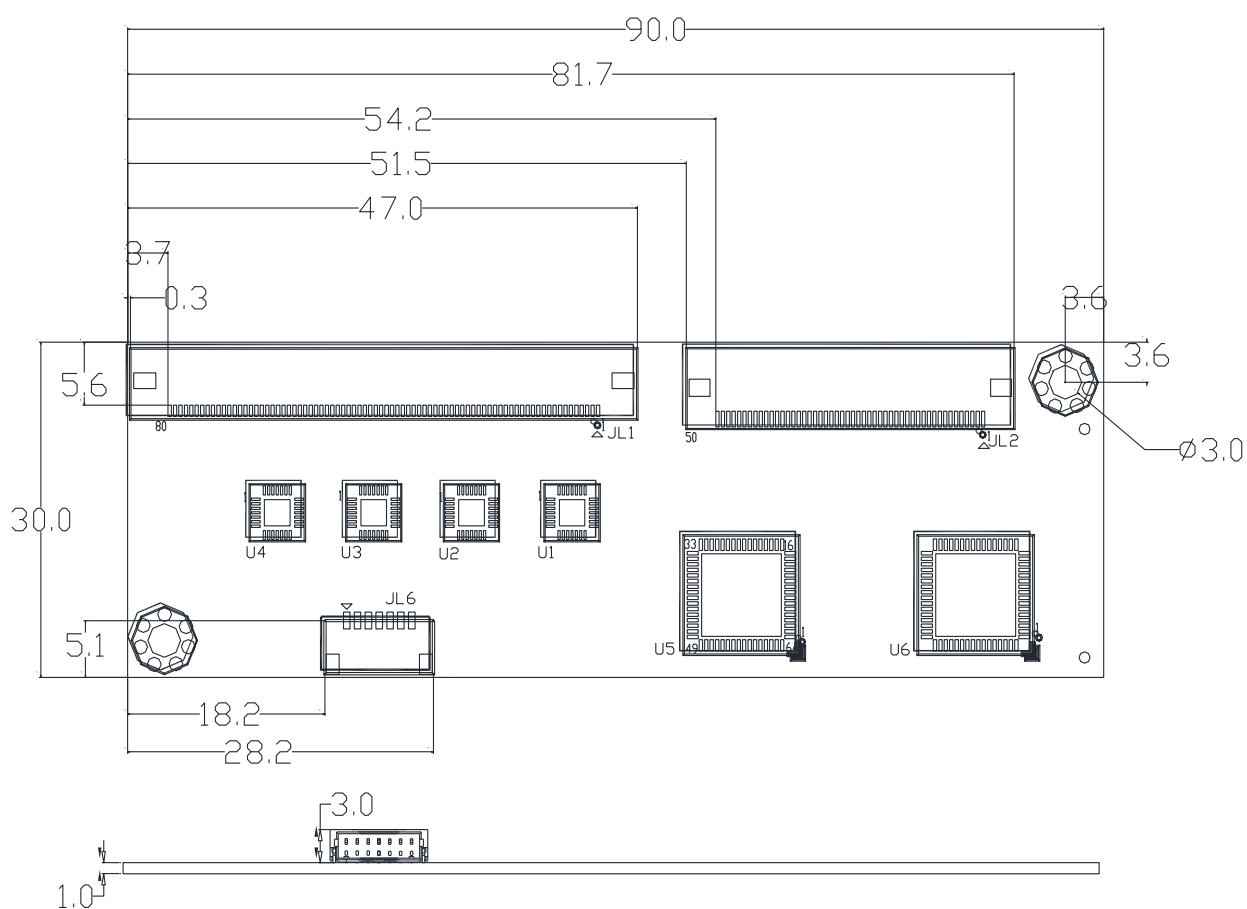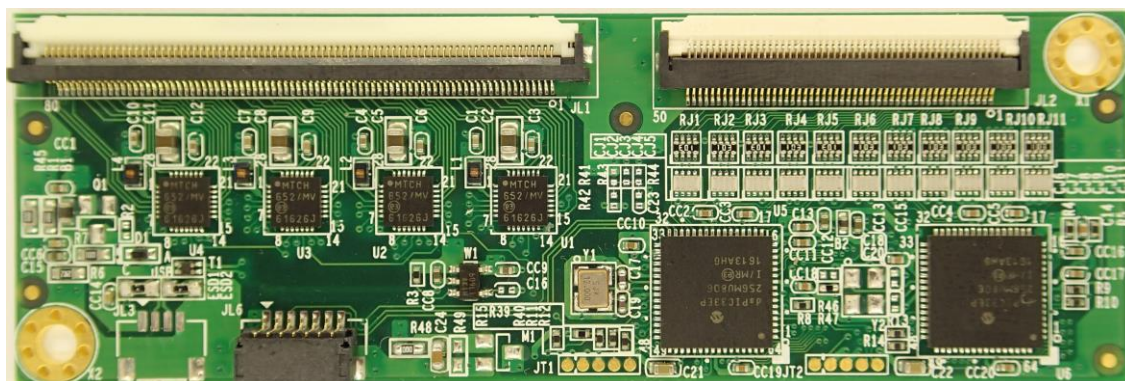
3.2 Touch line pin definition

PIN	Description	PIN	Description	PIN	Description	PIN	Description
JL1	80Pin ZIF , PH 0.5mm ; ACES 50520-08001-001						
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

PIN	Description	PIN	Description	PIN	Description	PIN	Description	PIN	Description
JL2	50Pin ZIF , PH 0.5mm ; ACES 51619-05001-001								
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

PM1715 series supports 2 kinds of communication interface: PM1715U for USB interface and PM1715I for I2C interface.

PM1715U

JL3 / 4PIN / ACES 50224-00401-001 (PM1715U)		
PIN NO.	SYMBOL	Description
1	VCC	Positive power supply
2	D-	D- pin of internal USB transceiver
3	D+	D+ pin of internal USB transceiver
4	GND	Ground
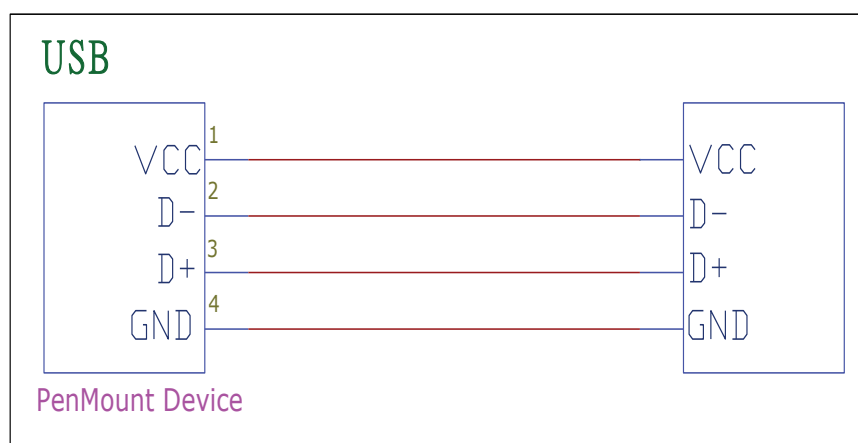
Figure 3. USB interface

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PM1715I

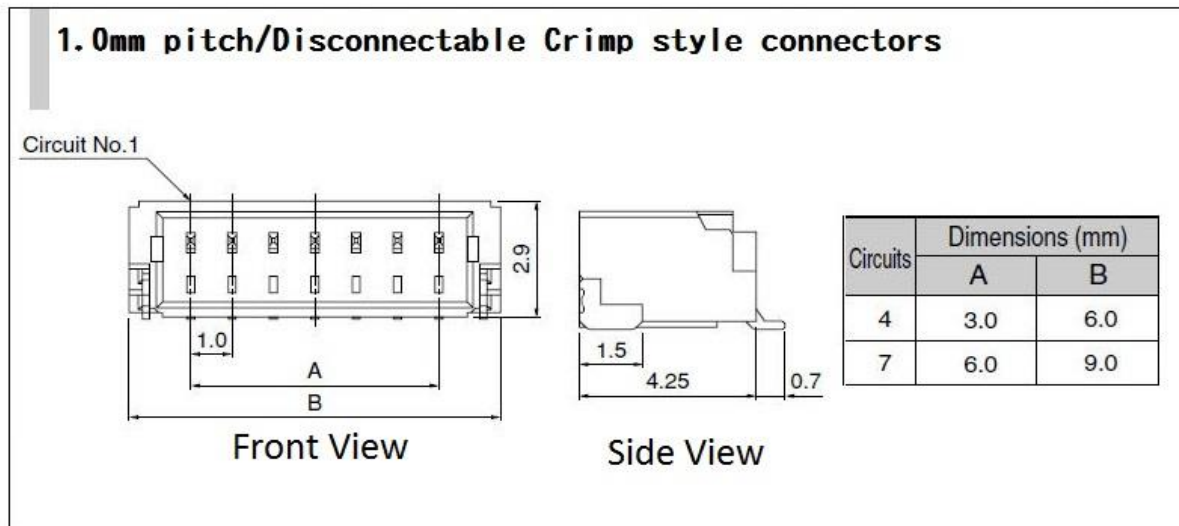| PIN NO.	I²C	Description
JL6 / 7PIN ; ACES 50224-00701-001 (PM1715I)
1	VCC	Positive power supply
2	GND	Ground
3	SCL	Serial clock line for I2C. Open drain requires external pull-up to VCC
4	SDA	Serial data line for I2C. Open drain requires external pull-up to VCC
5	nRESET	Open-drain and active low to reset PM1715I and must be driven low for 5 µs (typical) to be valid. Leave the pin unconnected if not used.
6	SW	Pull low for disable touch function, release this pin will back to enable touch function, Leave the pin unconnected if not used.
7	nINT	Processor Interrupt. This pin is active low, open drain, and should be pulled high to VCC

Figure 4. I2C interface

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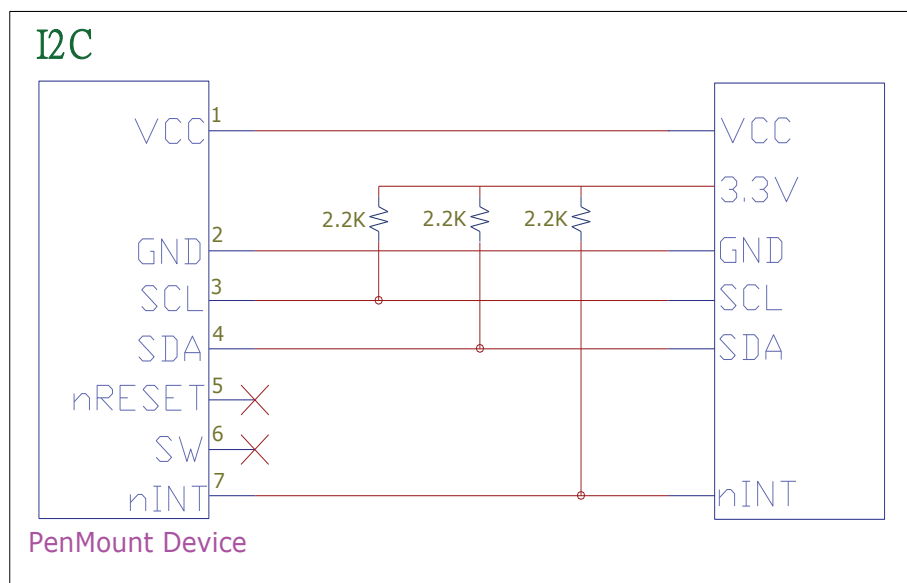
3.4 Connector specifications

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4.0 Drivers and Utilities

4.1 Drivers

For I²C:

- Windows CE : Binary driver for freescale iMX platform. Other platform by request.
- Linux / Android : Source code for integration.

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 to PenMount website

(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° 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.

PIN1
P1

PIN1
P2

PIN   ASSIGNMENT

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

Remark:

1.Test Conditions

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

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