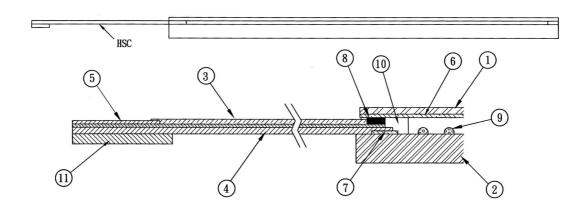
Analog 4-wire PET-On-Glass Touch Screen Specification

1. Mechanical Dimensions and Construction

- 1.1 General: Analog Resistive touch screen is laminated by ITO PET to ITO glass.
- 1.2 Construction:

Item	Description	Material	Remarks
	ITO PET	ITO PET Film	Antiglare coating
1	(Top layer)		Surface hardness: 3H
			Resistance:300~600Ω/□
	ITO Patterned Glass	1.10mm ITO Glass	Resistance:300~600Ω/□
2	(Bottom layer)		
3	Tail Base	PET-Film	Separated Tail
4	Tail Coverlay	PET-Film	
5	Conductor	Carbon	
6	Top layer circuit	Silver ink	
7	Bottom layer circuit	Silver ink	
8	Layer to layer contacted	Silver ink	
9	Dot spacer	UV Cure ink	
10	Isolation Layer	Isolation Adhesive	
11	Stiffener	PET Film	

Touch screen side view:



						C	Changes that contribu	ite to technical improvement ai	re subject to alternations		
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				Bearb.	24.10.	Maurer	TOUCHSCREEN				
				Gepr.	24.10.	Maurer		7", 4 Wire			
				Vert.							
				ED\	/-Datas	sheet	SPECIFIC	G RESISTIVE			
						PET-ON-GLASS TOUCH SCREE					
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1.3 Input Method and Activation Force

Input Method	Average Activation Force
1.6mm dia. Delrin stylus	0.10~0.70N
16mm dia. Silicon "finger"	0.10~0.80N

2. Typical Optical Characteristics

2.1 Visible Light Transmission: > 80%

2.2 Haze: < 10% (JIS K-7105)

3. Electrical Specifications

3.1 Operating Voltage: 5.5V or less3.2 Contact current: 20mA (maximum)

3.3 Circuit close resistance: $X:300-900\Omega$ $Y:300-900\Omega$

3.4 Circuit open resistance: $> 10M\Omega$ at 25VDC

 3.5
 Contact bounce:
 < 15ms</td>

 3.6
 Linear Test:
 <1.5 %</td>

 3.7
 Capacitance:
 < 100nF</td>

4. Linearity

4.1 Linear Test Specification

Direction X: <1.5 % Direction Y: <1.5 %

4.2 Linearity Test

Apply voltage (DC5V) to upper (or lower) electrodes, output voltage Vx (see Fig.4-1) or Vy (see Fig.4-2) on the other electrodes is measured at every regular intervals. Linearity is the value of max. error voltage (see Fig. 4-3).

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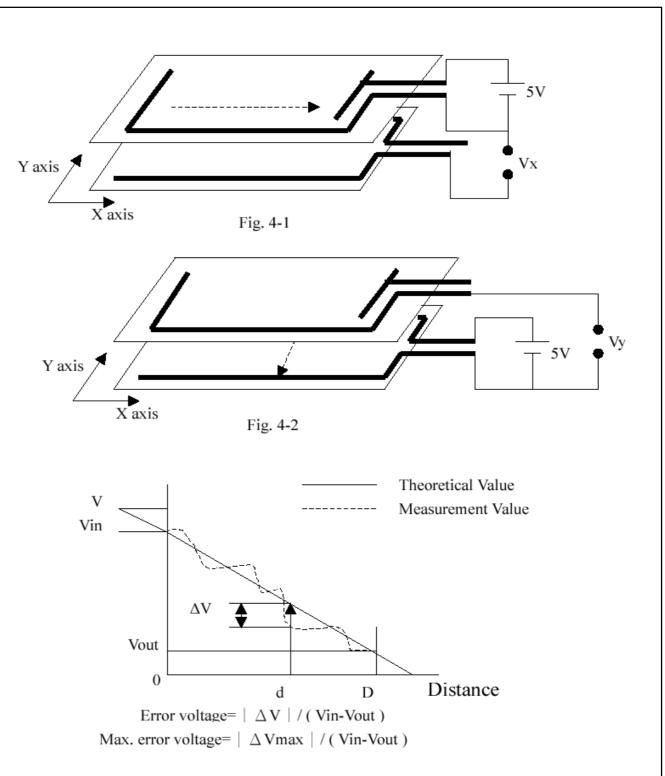


Fig. 4-3

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5. Environment Specification

- 5.1 Operating Temperature 10° C $\sim +60^{\circ}$ C Humidity less than 80% RH
- 5.2 Storage Temperature $-40^{\circ} \text{ C} \sim +80^{\circ} \text{ C}$ at Ambient Humidity

6. Reliability Test

6.1 Exposure to high temperature

Touch panel is put into a test machine at the condition of 80°C for 120 hours. Then it is left at the room temperature for 24 hours or more. The measurement must satisfy the following:

- Circuit close resistance: as Sec. 3.3

- Circuit open resistance: as Sec. 3.4

- Contact bounce: as Sec. 3.5

- Linearity test: as Sec. 3.6

6.2 Exposure to low temperature

Touch panel is put into a test machine at the condition of -40°C for 120 hours. Then it is left at the room temperature for 24 hours or more. The measurement must satisfy the following:

- Circuit close resistance: as Sec. 3.3

- Circuit open resistance: as Sec. 3.4

- Contact bounce: as Sec. 3.5

- Linearity test: as Sec. 3.6

6.3 Exposure to constant temperature and humidity

Touch panel is put into a test machine at the condition of 60°C, 90%RH for 120 hours. Then it is left at the room temperature for 24 hours or more. The measurement must satisfy the following:

- Circuit close resistance: as Sec. 3.3

Circuit open resistance: as Sec. 3.4

- Contact bounce: as Sec. 3.5

- Linearity test: as Sec. 3.6

6.4 Thermal Shock

Touch panel is put into a test machine at the condition of -40°C for 30 minutes, and then 80°C for 30 minutes. The process is repeated by 10 cycles. Then it is left at the room temperature for 24 hours or more. The measurement must satisfy the following:

- Circuit close resistance: as Sec. 3.3

Circuit open resistance: as Sec. 3.4

- Contact bounce: as Sec. 3.5

- Linearity test: as Sec. 3.6

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				Vert.							
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7. Durability test:

7.1 Finger touches

Touch panel is hit 10 millions times with a silicone rubber of R8 finger, hitting rate is by 250g at 2 times per second. The measurement must satisfy the following:

Circuit close resistance: as Sec. 3.3Circuit open resistance: as Sec. 3.4

Contact bounce: as Sec. 3.5Linearity test: as Sec. 3.6

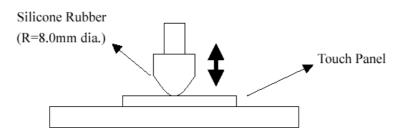


Fig. 7-1

7.2 Stylus writing

Touch panel is drawn by R0.8 stylus pen, at 250g forces, repeat one inch by 100K times. The measurement must satisfy the following:

Circuit close resistance: as Sec. 3.3Circuit open resistance: as Sec. 3.4

- Contact bounce: as Sec. 3.5 - Linearity test: as Sec. 3.6

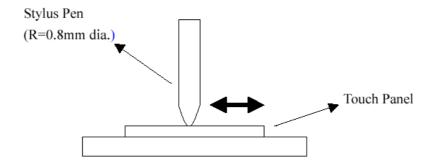


Fig. 7-2

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				Bearb.	24.10.	Maurer	-	TOU	CHSCREE	N
				2003	Datum	Name				
						C	Changes that contribut	te to tech	nical improvement ar	e subject to alternation

8. Optical Performance

- 8.1 Optical inspection method and optical defect standards refer to document. 150.9305 "Touch Screen Optical Quality Standard."
- 8.2 Outside to Viewing Area: any optical defected in this area need to be ignored if no effected to touch screen function.
- 8.3 Silver Bus Pattern defect: Voids in traces to be less than 50% of the trace width.

8.3.1 Silver Bus Pattern gap: >0.1mm

- 8.3.2 Silver Bus and Active area gap: No silver ink may project beyond the viewing area.
- 8.4 Glass defects such as edge chips and scratches refer to 150.9305
- 8.5 Others

Ideal storage conditions:

Store the touch screen in its original shipping container under normal conditions (20~25°C, 65% RH)

Changes that contribute to technical improvement are subject to alternations 2003 Datum Name Bearb. 24.10. Maurer **TOUCHSCREEN** 24.10. Maurer Gepr. 7", 4 Wire Vert. SPECIFICATIONS OF ANALOG RESISTIVE **EDV-Datasheet** PET-ON-GLASS TOUCH SCREEN Manufactured by Apex Material Technology Corp. don't change manually Н 1070.0448 Zu Änd. Datum Name D 79346 Endingen Blatt 6 von 6 Index: a