

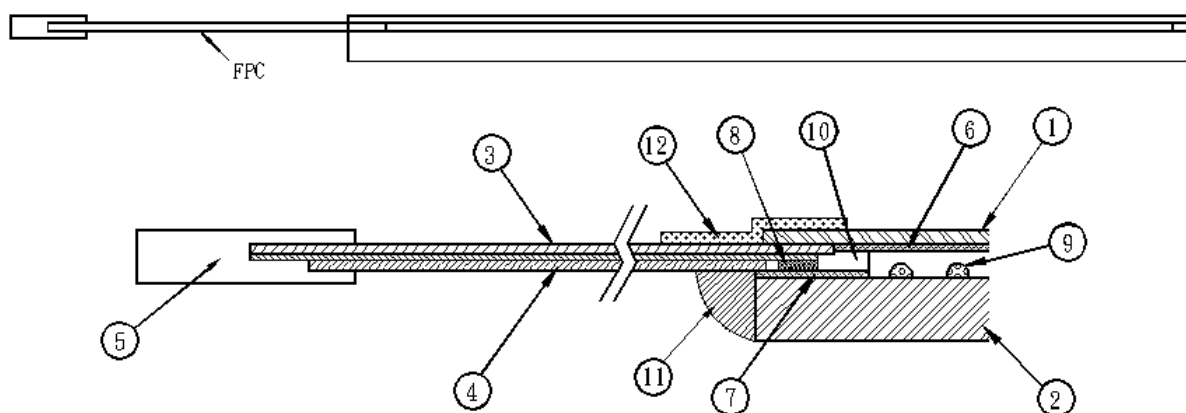
Analog 5-wire PET-On-Glass Touch Screen Specification

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
1	ITO PET (Top layer) New designed printing	0.188mm ITO PET Film	Antiglare coating Surface hardness: 3H Resistance:300~600Ω/□
2	ITO Patterned Glass (Bottom layer) New designed printing	2.8 mm ITO Glass	Resistance:300~900Ω/□
3	Tail Base	Kapton	Separated Tail
4	Tail cover lay	Kapton	
5	Connector	AMP compatible	2,54mm
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	Glue	UV Glue	
12	Preserve pet	PET Film	

Touch screen side view:



Changes that contribute to technical improvement are subject to alternations

				2006	Datum	Name	TOUCH SCREEN 15,0", 5-Wire AMT-02513-A1 SPECIFICATIONS OF ANALOG RESISTIVE PET-ON-GLASS TOUCH SCREEN Manufactured by Apex Material Technology Corp.
				Bearb.	18.08.	Maurer	
				Gepr.	18.08	Maurer	
				Vert.			
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1.3 Input Method and Activation Force

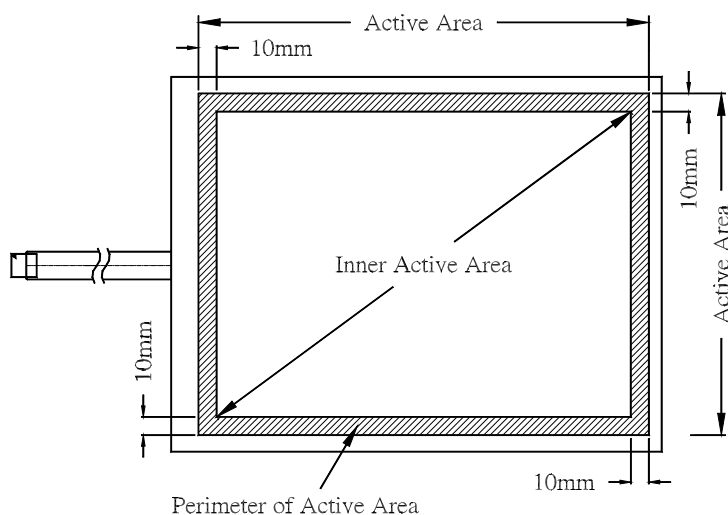
Input Method	Average Activation Force
16mm dia. Silicon "finger"	Less than 1.00 N

2. Typical Optical Characteristics

- 2.1 Visible Light Transmission: > 80%
- 2.2 Haze: < 13%

3. Electrical Specifications

- 3.1 Operating Voltage: 5.5V or less
- 3.2 Contact current: 20mA (maximum)
- 3.3 Circuit close resistance: 20~300Ω
- 3.4 Circuit open resistance: > 10MΩ at 25VDC
- 3.5 Contact bounce: < 15ms
- 3.6 Linearity Specifications: The linearity specifications are based on Hampshire or PenMount touch screen controllers and drivers to define.
- 3.6.1 Inner Active Area : 10 mm inside of X and Y active area dimensions.
- Perimeter of Active Area : The area 10 mm inside of X and Y active area dimensions.

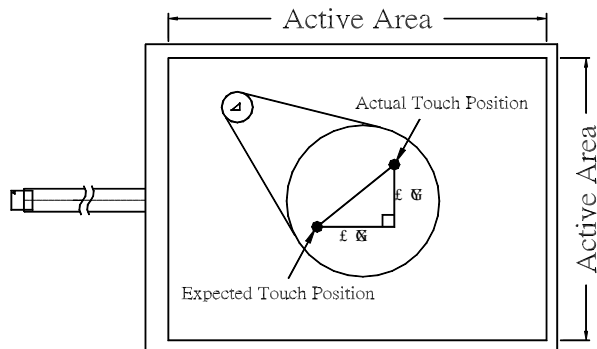


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3.6.2 Calculate Linearity

$$\%Linearity = \frac{\sqrt{\Delta X^2 + \Delta Y^2}}{Active\ Area\ Diagonal} * 100$$



3.6.3 Linearity:

Inner Active Area : <1.0%
Perimeter of Active Area : <1,5%

3.7 Electrostatic Discharge Protection : (per EN 61000-4-2) The touch screen withstands of 15KV air discharge and 8KV contact discharge.

4. Environment Specification

- 4.1 Operating Temperature - 10° C ~ + 60° C Humidity less than 90% RH, no dew condensation
- 4.2 Storage Temperature - 40° C ~ + 80° C, at Ambient Humidity

5. Reliability Test

5.1 Exposure to high temperature

Touch panel is put into a test machine at the condition of 80°C for 504 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

5.2 Exposure to low temperature

Touch panel is put into a test machine at the condition of -40°C for 504 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

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- 5.3 Exposure to constant temperature and humidity
 Touch panel is put into a test machine at the condition of 60°C, 90%RH for 504 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

- 5.4 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

6. Durability test:

- 6.1 Finger touches
 Touch panel is hit 36 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. 3.3
 - Circuit open resistance: as Sec. 3.4
 - Contact bounce: as Sec. 3.5
 - Linearity test: as Sec. 3.6


7. Optical Performance:

- 7.1 Optical inspection method and optical defect standards refer to document. A001-2 Touch Screen Optical Quality Standard.
- 7.2 Outside to Active Area : any optical defected in this area need to be ignored if no effected to touch screen function.

8. Others

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

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