

**Apex Material Technology Corp.**  
**創為精密材料股份有限公司**

AMT PRODUCT STANDARD

Doc No:	AS-02511-B1	Doc Rev: 1.0
Title:	SPECIFICATIONS OF ANALOG RESISTIVE TOUCH SCREEN	Released: Dec.05,2006
	Part Number : 2511 Rev: B	Page. 1 of 5

Analog 5wires Touch Screen Specification  
 Manufacture: Apex Material Technology Corp.  
 Part No. : 2511 Rev: B

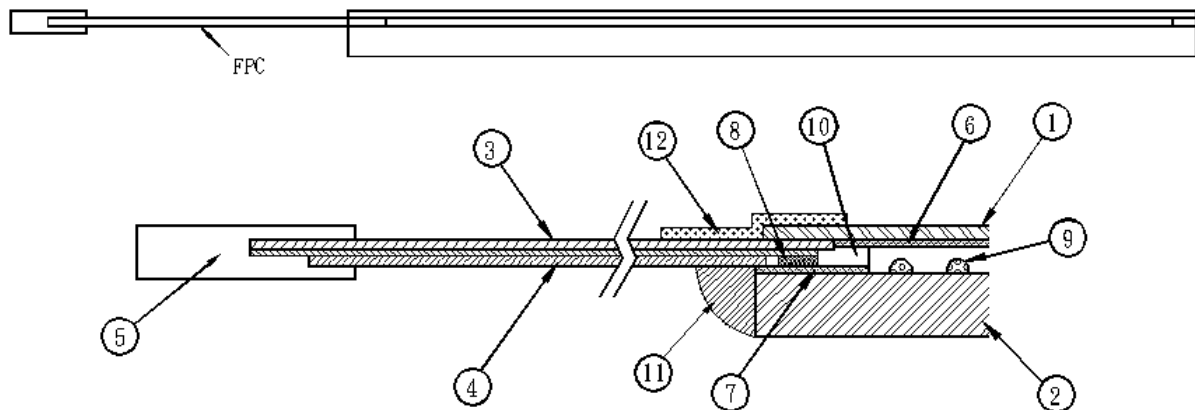
1. Mechanical Dimensions and Construction

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

Item	Description	Material	Remarks
1	Top layer	0.188mm ITO PET	Anti-glare coating Surface hardness: 3H Resistance:300~600 Ω/□
2	Bottom layer	2.80mm ITO Glass	Resistance:300~900 Ω/□
3	Tail Base	Polymide	Separated Tail
4	Tail Coverlay	Polymide	
5	Connector	AMP Compatible	Pitch:2.54mm
6	Top layer circuit	Silver ink	
7	Bottom layer circuit	Silver ink	
8	Layer to layer contacted	Silver Glue	
9	Dot spacer	Resin Polymer	
10	Isolation Layer	Double Side Adhesive	
11	Preserve glue	UV glue	
12	Preserve pet	PET Film	

Remark : This model is with ANR design.

Touch screen side view:



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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

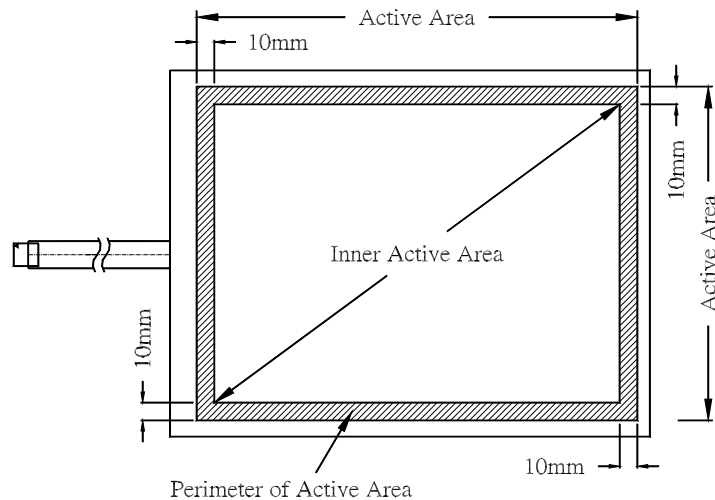
- 2.1 Visible Light Transmission: >80%
- 2.2 Haze: <13%

## 3. Electrical Specifications

- 3.1 Operating Voltage: 5.5V or less
- 3.2 Contact current: 70mA (maximum)
- 3.3 Circuit close resistance: 30~300Ω
- 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.



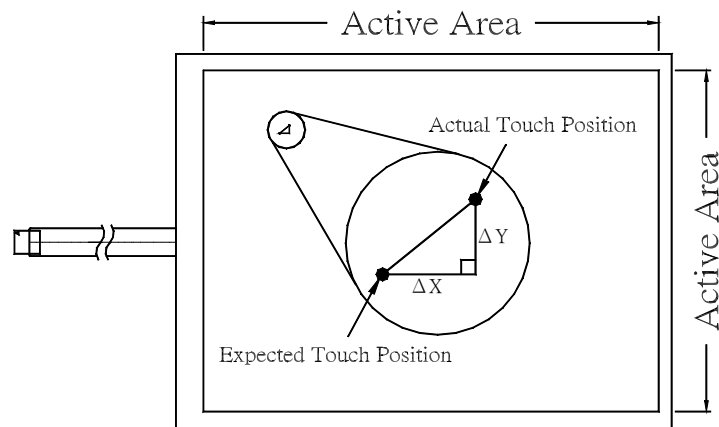
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### 3.6.2 Calculate Linearity

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



### 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 85% 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 for 504 hours. Then it is left at the room temperature for 24 hours or more. The measurement must satisfy the following:

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- 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 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

#### 5.3 Exposure to constant temperature and humidity

Touch panel is put into a test machine at the condition of 60 , 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 for 30 minutes, and then 80 for 30 minutes. The process is repeated by 50 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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6. Durability test:

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 AMT document. A001 updated version; "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.

7.3 Others

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

7.3.2 This part is ROHS compliant.