

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

AMT PRODUCT STANDARD

Doc No:	AS-09507-00C-7	Doc Rev: 7.0
Title:	SPECIFICATIONS OF ANALOG RESISTIVE TOUCH SCREEN	Released: Aug. 19, 2011
	Model Name: 09507-00 Rev: C Size: 8.48"	Page. 1 of 7

Analog Touch Screen Specification

Manufacturer: Apex Material Technology Corp.

Model Name: 09507-00 Rev: C

1. Mechanical Dimensions and Construction

1.1 General: Analog Resistive touch screen is laminated by ITO film to ITO glass.

1.2 Mechanical Performance:

1.2.1 Surface hardness: 3H

1.2.2 ITO Glass Thickness: 1.1mm

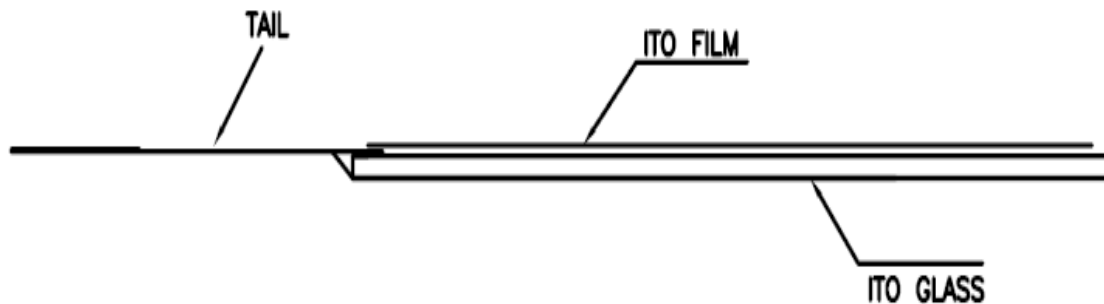
1.2.3 Tail Type: FPC

1.2.4 Surface Finish Type: Anti-glare

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

Touch screen side view:



Remarks: This Model is with Anti-Newton Ring design.

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

AMT PRODUCT STANDARD

Doc No:	AS-09507-00C-7	Doc Rev: 7.0
Title:	SPECIFICATIONS OF ANALOG RESISTIVE TOUCH SCREEN	Released: Aug. 19, 2011
	Model Name: 09507-00 Rev: C Size: 8.48"	Page. 2 of 7

2. Typical Optical Characteristics

- 2.1 Visible Light Transmission:  $82 \pm 3\%$
- 2.2 Haze:  $9.5 \pm 4\%$

3. Electrical Specifications

- 3.1 Operating Voltage: 5.5V or less
- 3.2 Contact current: 20mA (maximum)
- 3.3 Circuit close resistance: X : 400~1000 $\Omega$   
Y : 200~650 $\Omega$
- 3.4 Circuit open resistance: > 10M $\Omega$  at 25VDC
- 3.5 Contact bounce: < 10ms
- 3.6 Linear Test : <1.5 %
- 3.7 Capacitance: 100nF (maximum)
- 3.8 Electrostatic Discharge Protection: (per EN 61000-4-2 )

The touch screen withstands of 15KV air discharge and 8KV contact discharge.

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).

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

AMT PRODUCT STANDARD

Doc No:	AS-09507-00C-7	Doc Rev: 7.0
Title:	SPECIFICATIONS OF ANALOG RESISTIVE TOUCH SCREEN	Released: Aug. 19, 2011
	Model Name: 09507-00 Rev: C Size: 8.48"	Page. 3 of 7

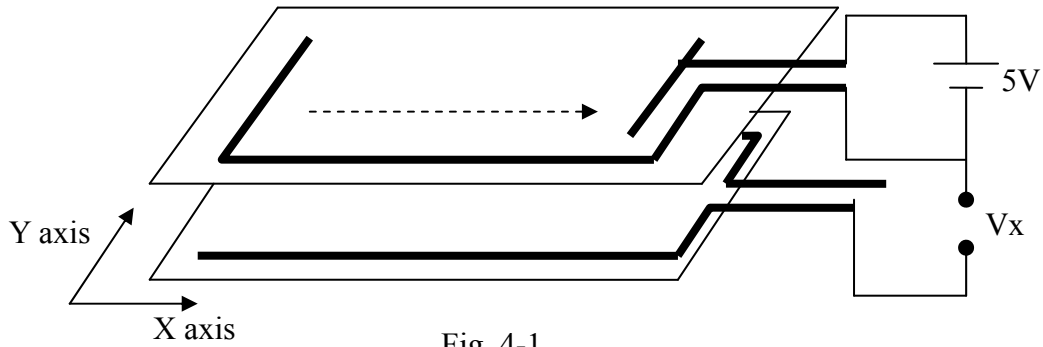


Fig. 4-1

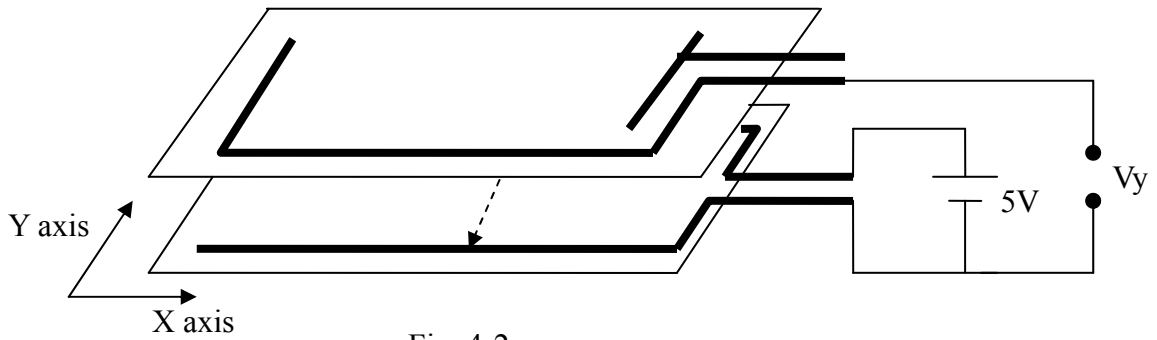
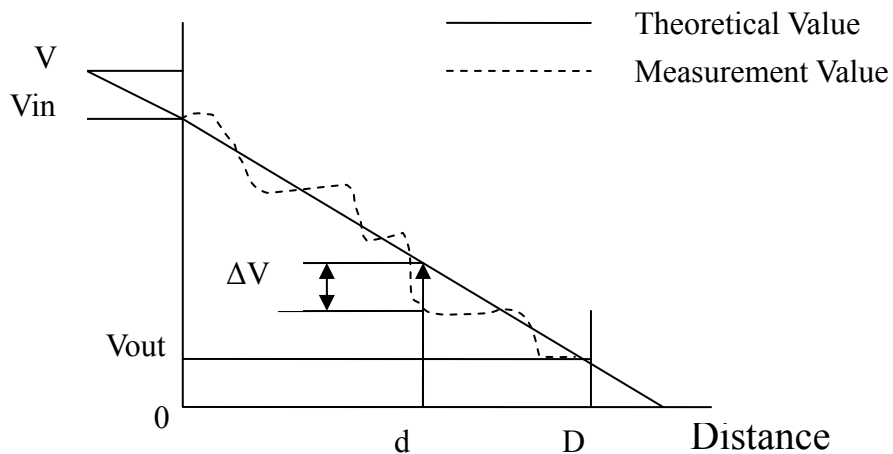


Fig. 4-2



$$\text{Error voltage} = \frac{|\Delta V|}{(V_{in} - V_{out})}$$

$$\text{Max. error voltage} = \frac{|\Delta V_{max}|}{(V_{in} - V_{out})}$$

Fig. 4-3

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

AMT PRODUCT STANDARD

Doc No:	AS-09507-00C-7	Doc Rev: 7.0
Title:	SPECIFICATIONS OF ANALOG RESISTIVE TOUCH SCREEN	Released: Aug. 19, 2011
	Model Name: 09507-00 Rev: C Size: 8.48"	Page: 4 of 7

5. Environmental Specifications

5.1 Operating Temperature:  $-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$

5.2 Storage Temperature:  $-40^{\circ}\text{C} \sim +80^{\circ}\text{C}$

5.3 Humidity: if temp.  $\geq 20^{\circ}\text{C}$ , see Fig.5 below  
 if temp.  $< 20^{\circ}\text{C}$ , humidity less than 90% RH  
 No dew condensation

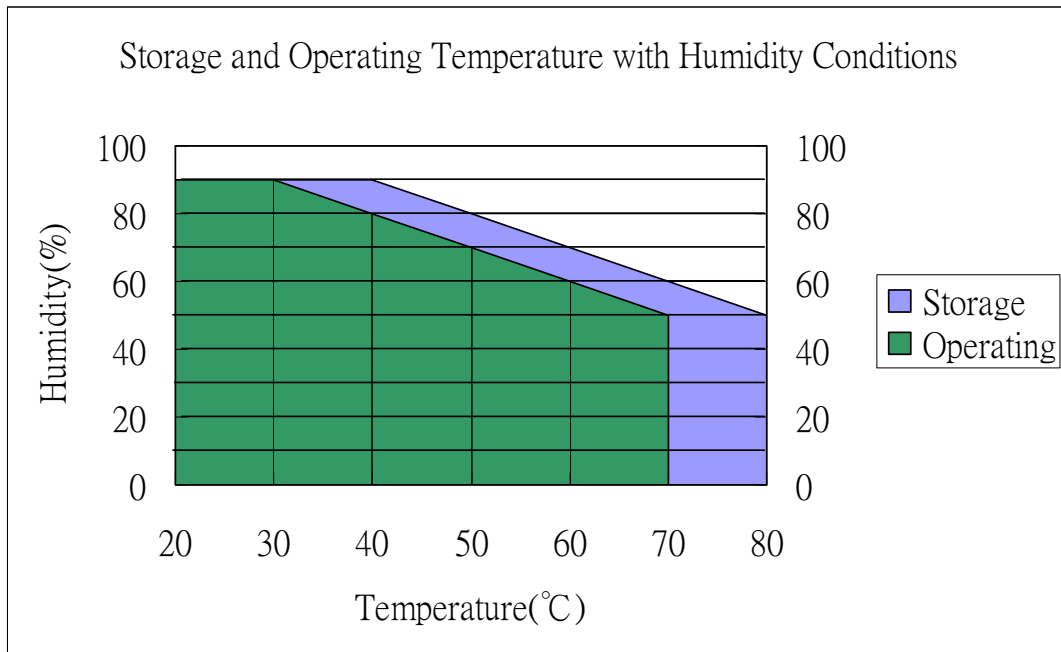


Fig.5 Storage and Operating Temperature with Humidity Conditions

6. Reliability Test

6.1 Exposure to high temperature

Touch panel is put into a test machine at the condition of  $80^{\circ}\text{C}$  for 288 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

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

AMT PRODUCT STANDARD

Doc No:	AS-09507-00C-7	Doc Rev: 7.0
Title:	SPECIFICATIONS OF ANALOG RESISTIVE TOUCH SCREEN	Released: Aug. 19, 2011
	Model Name: 09507-00 Rev: C Size: 8.48"	Page. 5 of 7

#### 6.2 Exposure to low temperature

Touch panel is put into a test machine at the condition of  $-40^{\circ}\text{C}$  for 288 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  $50^{\circ}\text{C}$ , 80%RH for 288 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  $-40^{\circ}\text{C}$  for 30 minutes, and then  $80^{\circ}\text{C}$  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

### 7. Durability test:

#### 7.1 Finger touches

Touch panel is hit 10 millions times with a silicone rubber of R8 finger(see Fig.7-1), hitting rate is by 250g at 2 times per second. The measurement must satisfy the following:

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

AMT PRODUCT STANDARD

Doc No:	AS-09507-00C-7	Doc Rev: 7.0
Title:	SPECIFICATIONS OF ANALOG RESISTIVE TOUCH SCREEN	Released: Aug. 19, 2011
	Model Name: 09507-00 Rev: C Size: 8.48"	Page: 6 of 7

- 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

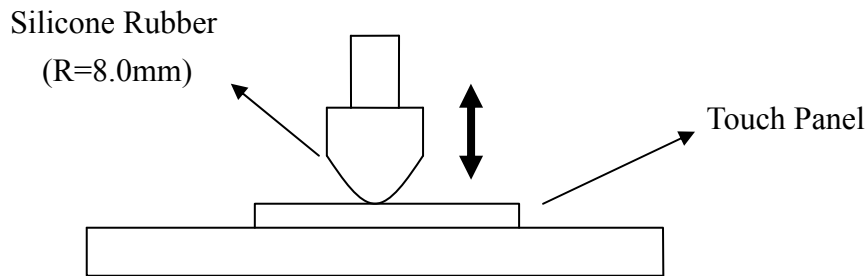


Fig. 7-1

### 7.2 Stylus writing

Touch panel is drawn by R0.8 Derlin stylus pen, at 250g forces, repeat one inch by 200K times (see Fig.7-2). 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

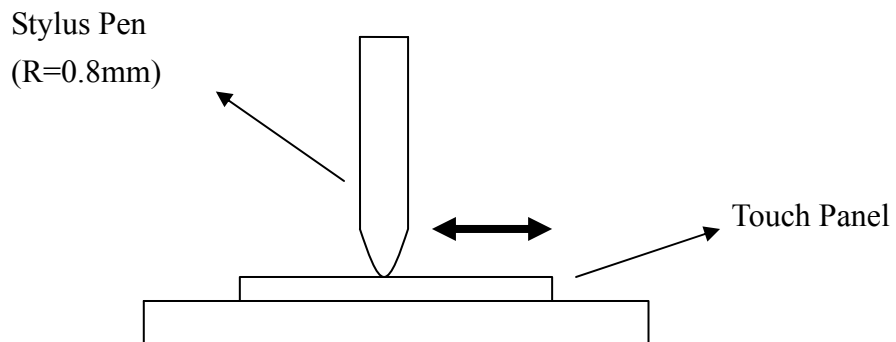


Fig. 7-2

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

AMT PRODUCT STANDARD

Doc No:	AS-09507-00C-7	Doc Rev: 7.0
Title:	SPECIFICATIONS OF ANALOG RESISTIVE TOUCH SCREEN	Released: Aug. 19, 2011
	Model Name: 09507-00 Rev: C Size: 8.48"	Page. 7 of 7

8. Optical Performance

8.1 Optical inspection method and optical defect standards refer to AMT document A001 updated version ; "Touch Screen Optical Quality Standard."

8.2 Outside to Viewing Area: any optical defects in this area need to be ignored if no touch screen function is affected.

9. Others

9.1 Always store the touch screen in its original shipping container under normal conditions (Temperature 20~25°C ; Humidity  $\leq$  65%RH).

9.2 This Model is RoHS compliant.