Doc No:	AS-09556-000-4	Doc Rev:4.0
Title:	SPECIFICATIONS OF ANALOG RESISTIVE TOUCH SCREEN Model Name: 09556-00 Rev.0 Size:8.00”	Date Released: Sep. 14, 2011
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Analog Touch Screen Specification

Manufacturer: Apex Material Technology Corp.

Model Name: 09556-00 Rev.0

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: 1.10mm

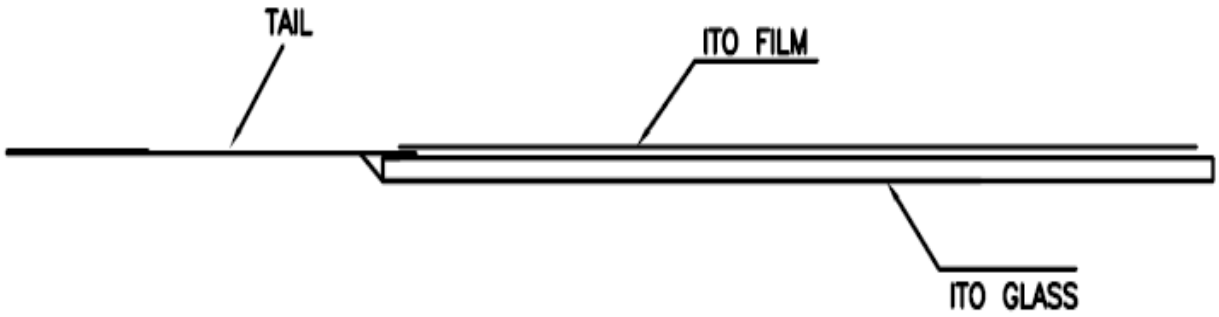
1.2.3 Tail Type: FPC

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. Silicone "finger"	0.10~0.80N

Touch screen side view:



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

2. Typical Optical Characteristics

2.1 Visible Light Transmission: 82 ± 3%

2.2 Haze: 9.5 ± 4%

3. Electrical Specifications

3.1 Operating Voltage: 5.5V or less

3.2 Contact current: 40mA (maximum)

3.3 Circuit close resistance: X-Axis (Between pin1 & pin3) : 350~1050Ω
Y-Axis (Between pin2 & pin4): 150~700Ω

3.4 Circuit open resistance: > 10MΩ 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 can withstand 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).

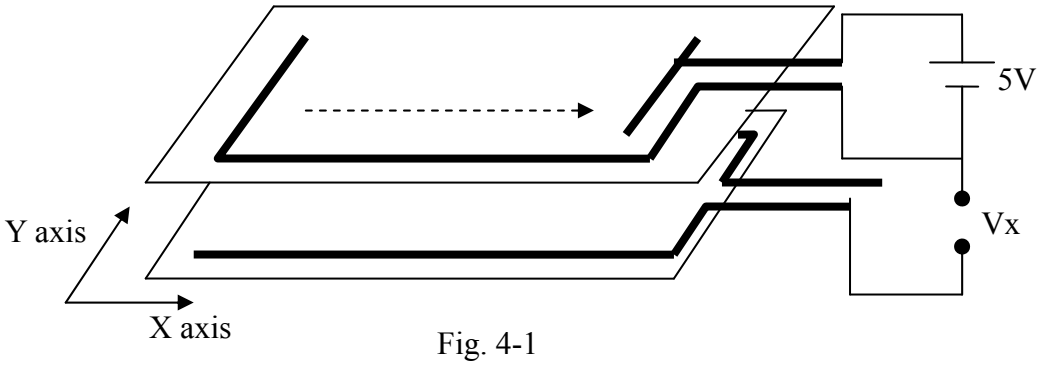


Fig. 4-1

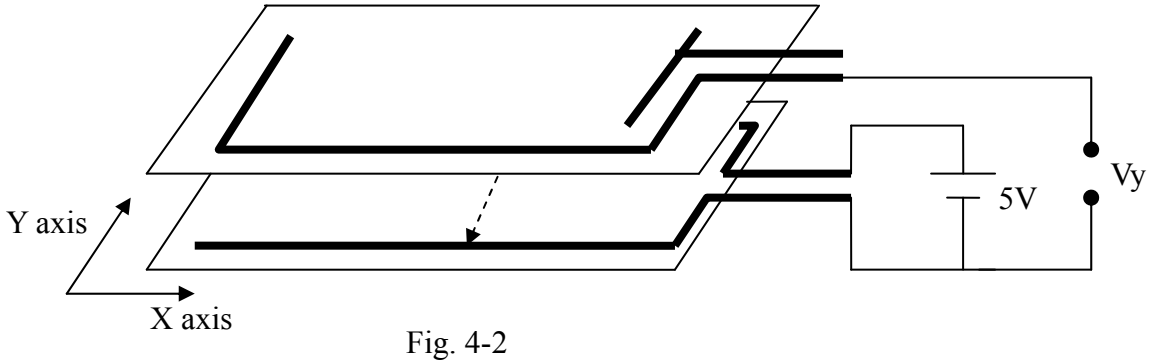
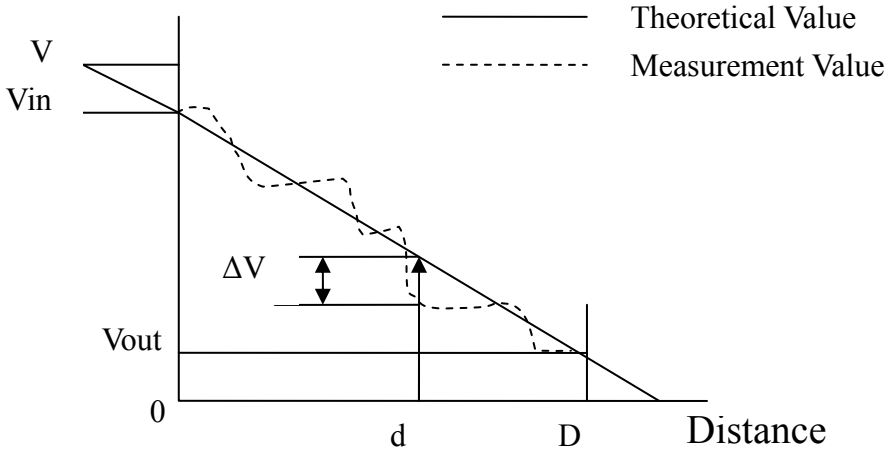


Fig. 4-2



Error voltage= ｜ ΔV ｜ / (Vin-Vout)

Max. error voltage= ｜ ΔVmax ｜ / (Vin-Vout)

Fig. 4-3

5. Environmental Specifications

5.1 Operating Temperature: -20° C ~ + 70° C

5.2 Storage Temperature: -40° C ~ + 80° C

5.3 Humidity: if temp. ≧ 20° C, see Fig.5 below

if temp. < 20° C, humidity less than 90% RH

No dew condensation

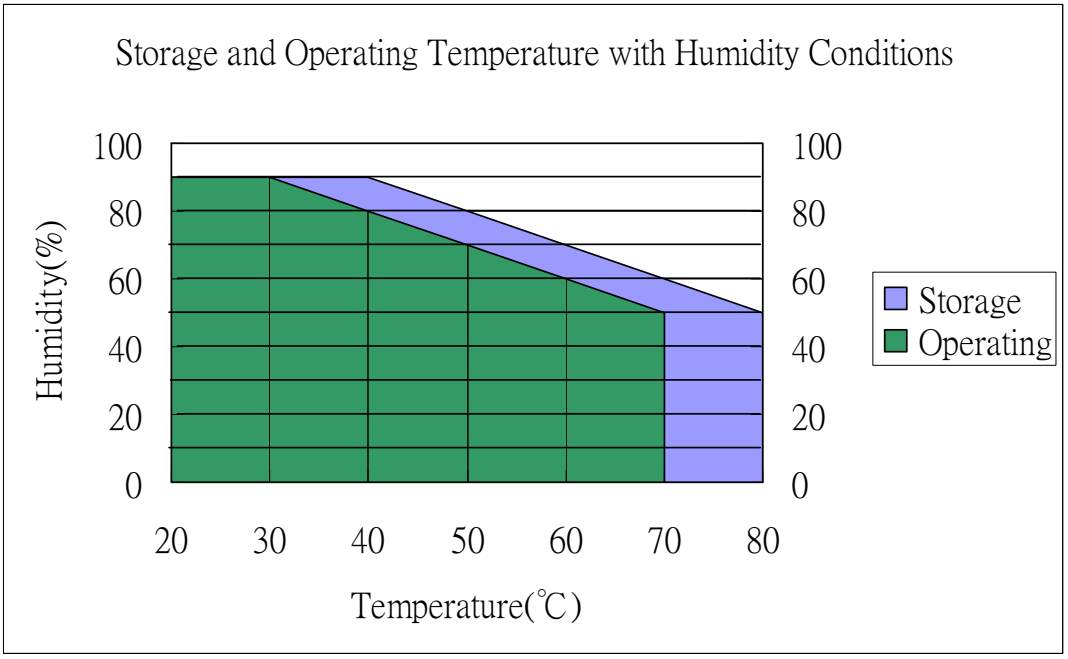


Fig.5 Storage and Operating Temperature with Humidity Conditions

6. Reliability Test

6.1 Exposure to high temperature

Touch panel is put into a test machine at the condition of 80℃ for 288hours. Then it is left at 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℃ for 288 hours. Then it is left at 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℃, 80%RH for 288 hours. Then it is left at 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℃ for 30 minutes, and then 80℃ for 30 minutes. The process is repeated by 10 cycles. Then it is left at 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:

- 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

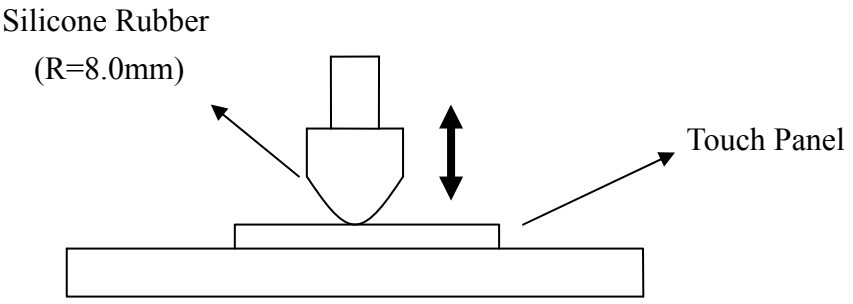


Fig. 7-1

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

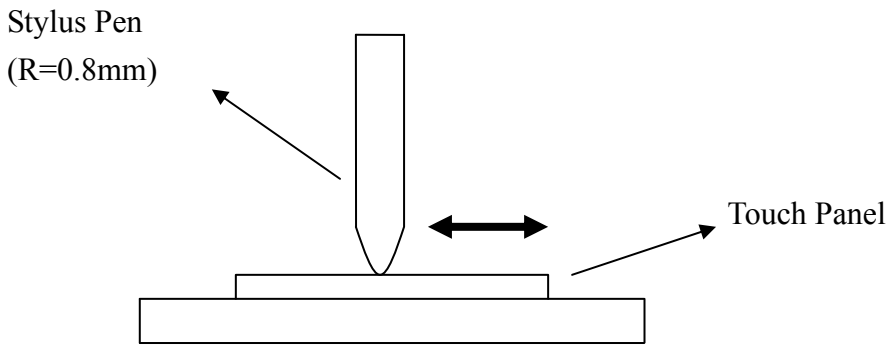


Fig. 7-2

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℃; Humidity ≦65%RH).

9.2 This Model is RoHS compliant.