

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

AMT PRODUCT STANDARD

| | | |
|---------|---|-------------------------|
| Doc No: | AS-09521-C2 | Doc Rev:2.0 |
| Title: | SPECIFICATIONS OF ANALOG RESISTIVE TOUCH SCREEN | Released: Apr.6,2006 |
| | Part Number : 9521 Rev: C | Page. 1 of 7 |

Analog Touch Screen Specification

Manufacture: Apex Material Technology Corp.

Part No. : 9521 Rev: C

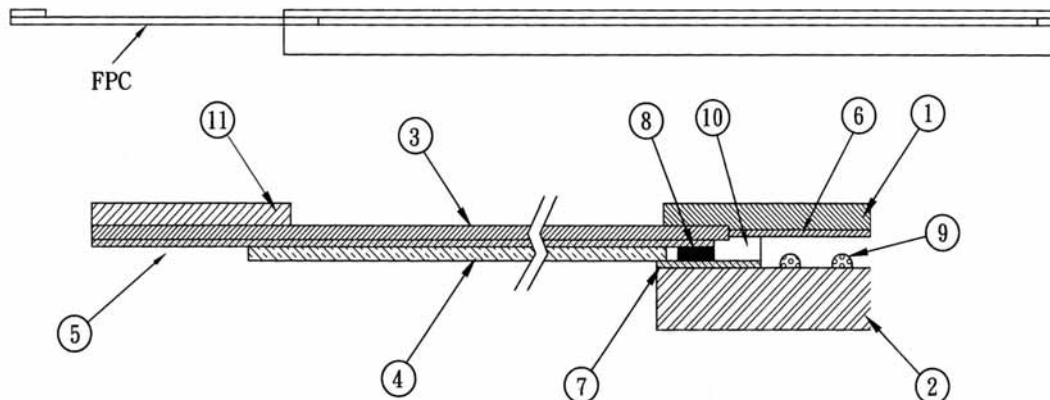
1. Mechanical Dimensions and Construction

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 | 1.6mm ITO Glass | Resistance:300~600 Ω/□ |
| 3 | Tail Base | Polyimide | Separated Tail |
| 4 | Tail Coverlay | Polyimide | |
| 5 | Conductor | Copper | |
| 6 | Top layer circuit | Silver ink | |
| 7 | Bottom layer circuit | Silver ink | |
| 8 | Layer to layer contacted | Silver Glue | |
| 9 | Dot spacer | UV ink | |
| 10 | Isolation Layer | Double Side Adhesive | |
| 11 | Stiffener | Polyester | |

Touch screen side view:



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

AMT PRODUCT STANDARD

| | | |
|---------|---|-------------------------|
| Doc No: | AS-09521-C2 | Doc Rev:2.0 |
| Title: | SPECIFICATIONS OF ANALOG RESISTIVE TOUCH SCREEN | Released: Apr.6,2006 |
| | Part Number : 9521 Rev: C | Page. 3 of 7 |

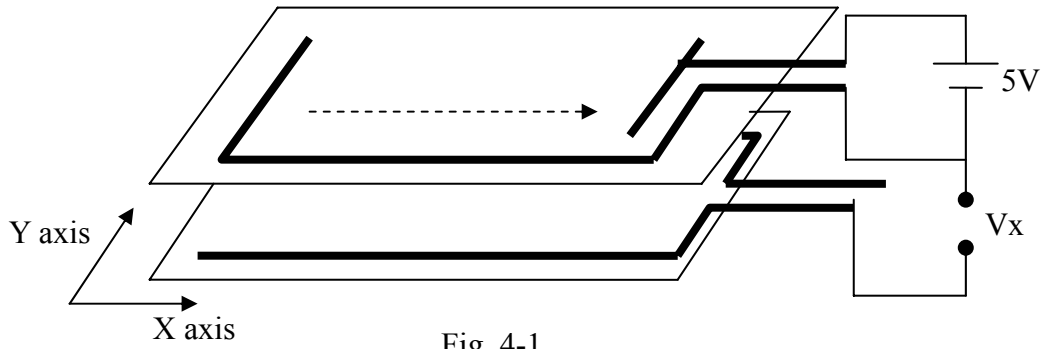


Fig. 4-1

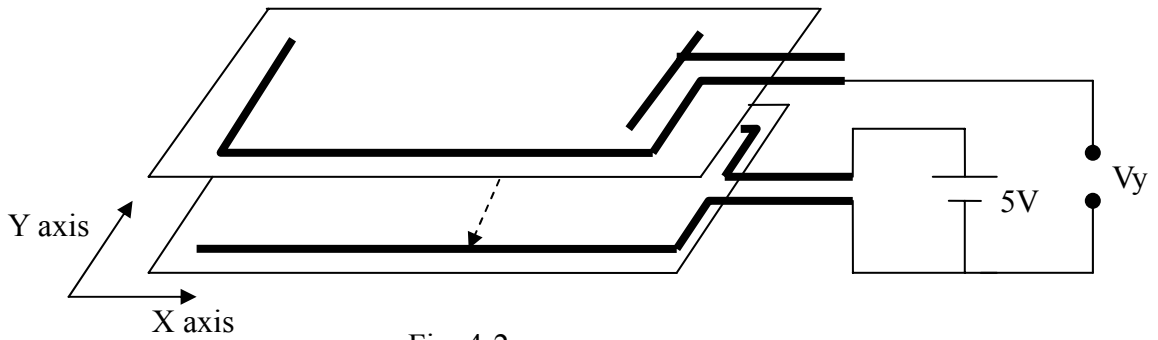
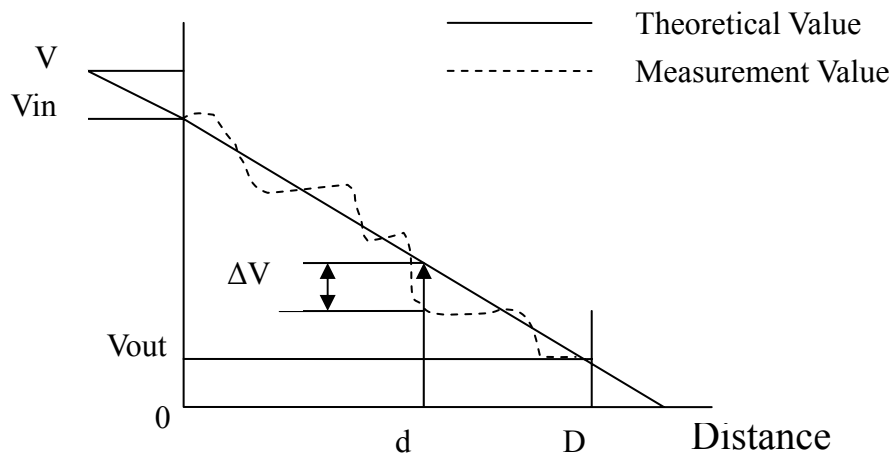


Fig. 4-2



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

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

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-09521-C2 | Doc Rev:2.0 |
| Title: | SPECIFICATIONS OF ANALOG RESISTIVE TOUCH SCREEN | Released: Apr.6,2006 |
| | Part Number : 9521 Rev: C | Page. 4 of 7 |

5. Environment Specification

- 5.1 Operating Temperature -10° C ~ + 60° C
Humidity less than 80% RH
No dew condensation
- 5.2 Storage Temperature -40° C ~ + 80° 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 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

6.2 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 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-09521-C2 | Doc Rev:2.0 |
| Title: | SPECIFICATIONS OF ANALOG RESISTIVE TOUCH SCREEN | Released: Apr.6,2006 |
| | Part Number : 9521 Rev: C | Page. 5 of 7 |

6.3 Exposure to constant temperature and humidity

Touch panel is put into a test machine at the condition of 60 , 90%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 for 30 minutes, and then 80 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:

- 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-09521-C2 | Doc Rev:2.0 |
| Title: | SPECIFICATIONS OF ANALOG RESISTIVE TOUCH SCREEN | Released: Apr.6,2006 |
| | Part Number : 9521 Rev: C | Page. 6 of 7 |

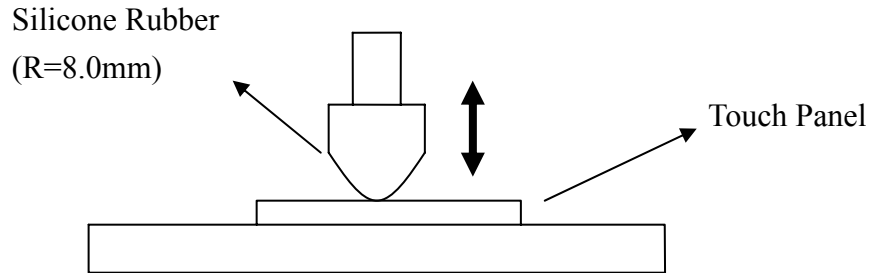


Fig. 7-1

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

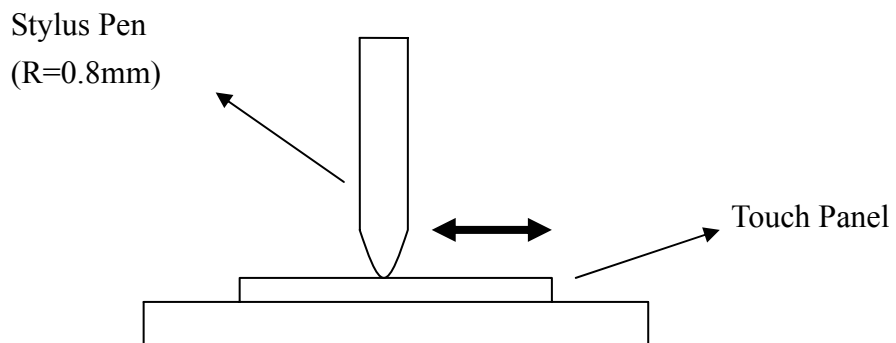


Fig. 7-2

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

AMT PRODUCT STANDARD

| | | |
|---------|---|-------------------------|
| Doc No: | AS-09521-C2 | Doc Rev:2.0 |
| Title: | SPECIFICATIONS OF ANALOG RESISTIVE TOUCH SCREEN | Released: Apr.6,2006 |
| | Part Number : 9521 Rev: C | 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 defected in this area need to be ignored if no effected to touch screen function.

9. Others

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

9.2 This part is RoHS compliant.