4-Wire Resistive Touch Panel Specifications

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

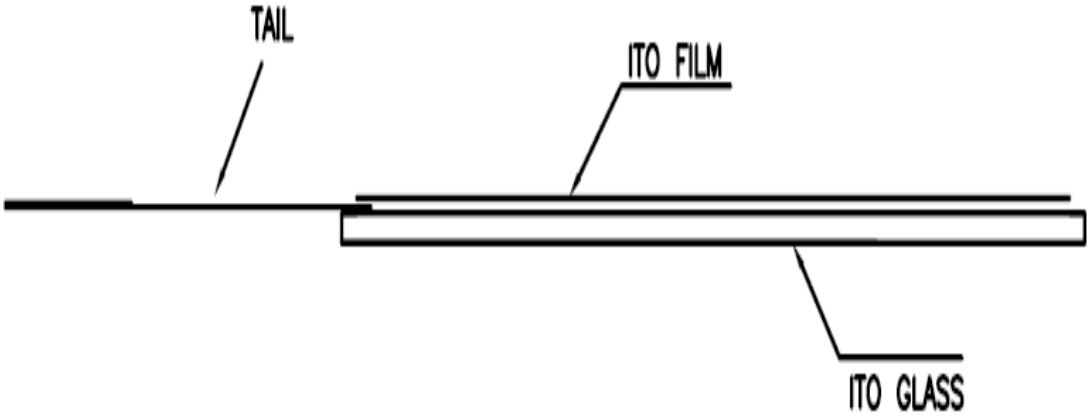
1.2.3 Tail Type: FPC

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) : 450~1100Ω

Y-Axis (Between pin2 & pin4): 150~600Ω

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).

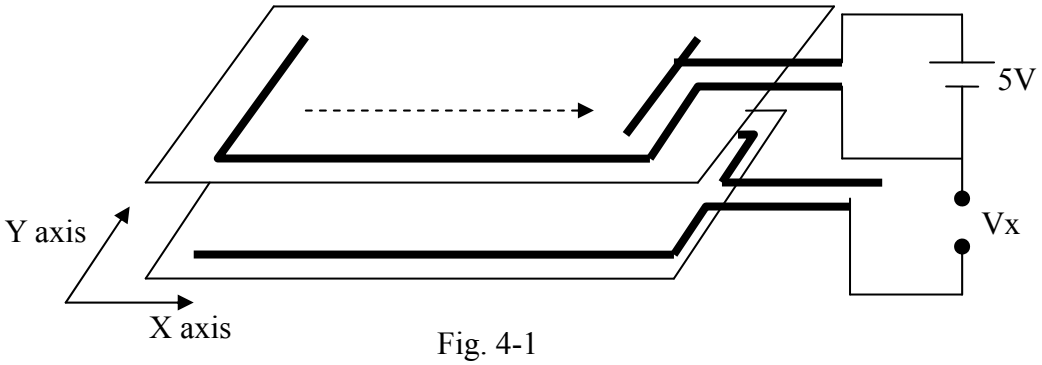


Fig. 4-1

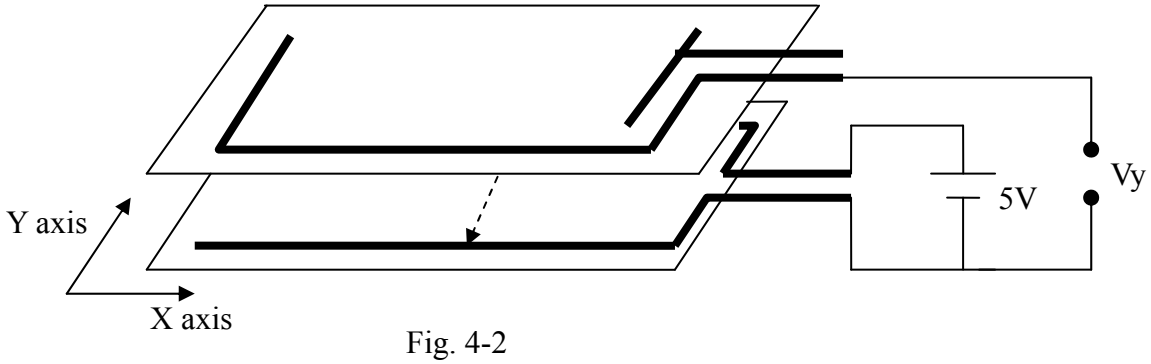
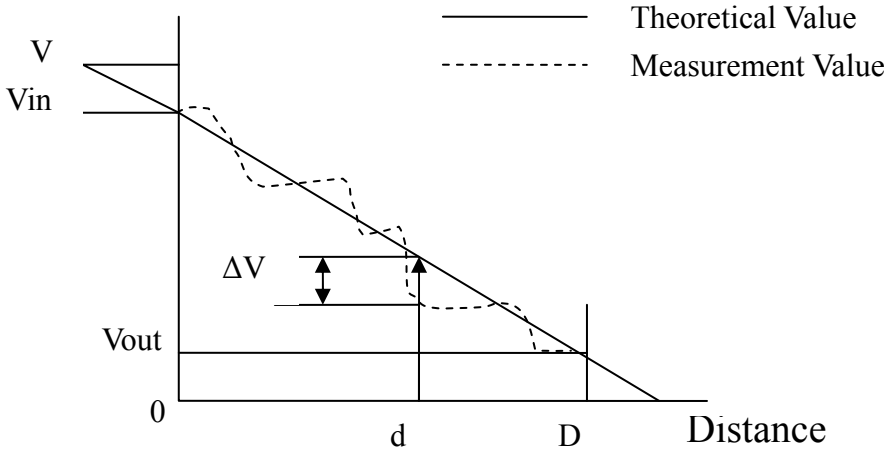


Fig. 4-2



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

If temperature over 60℃, minimum 24 hours operating confirmed.

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

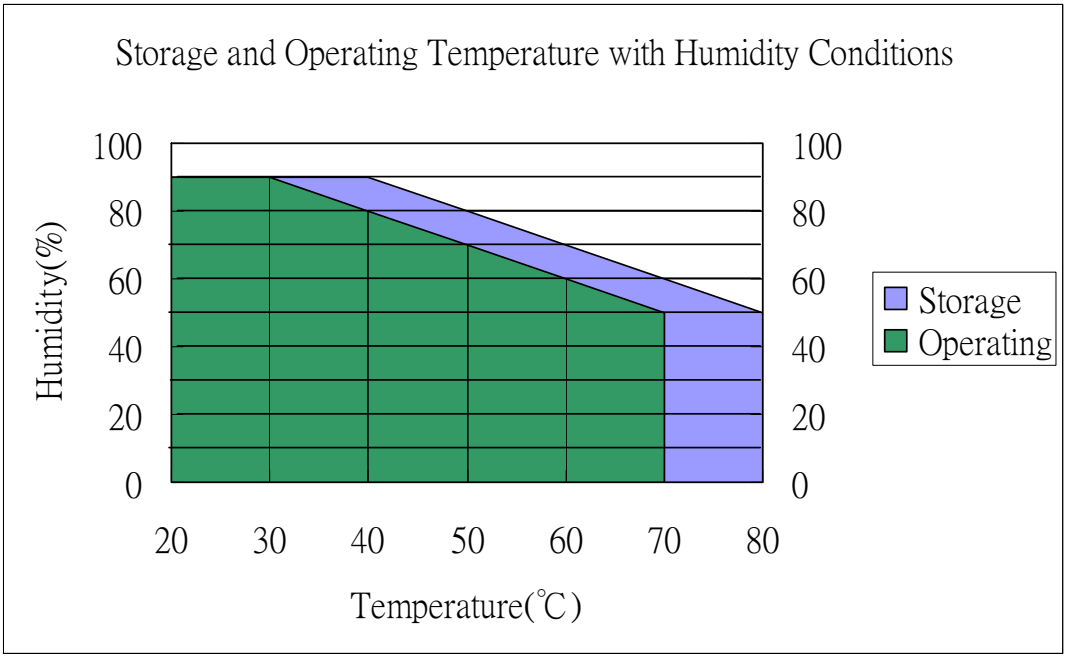


Fig.5 Storage and Operating Temperature with Humidity Conditions

6. Reliability Test

6.1 Exposure to high temperature

Touch panel is put into a test machine at the condition of 80℃ for 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

6.2 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

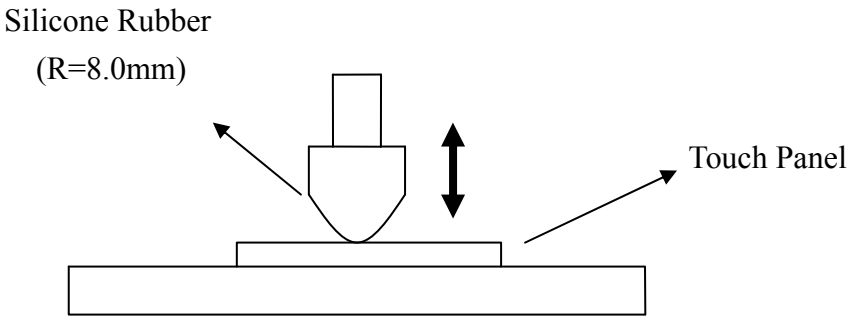


Fig. 7-1

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

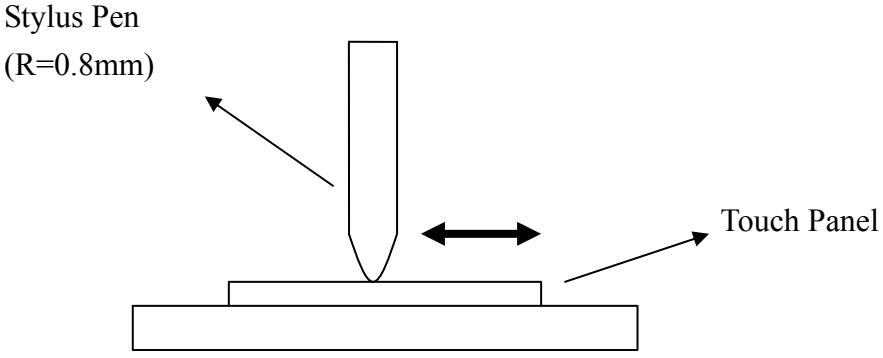
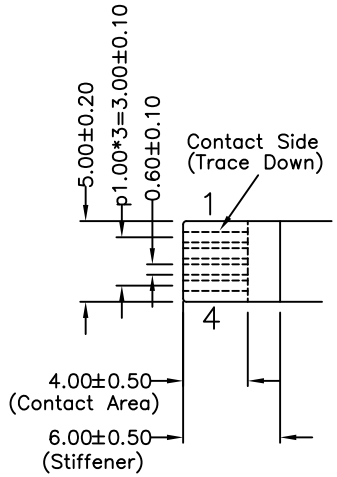


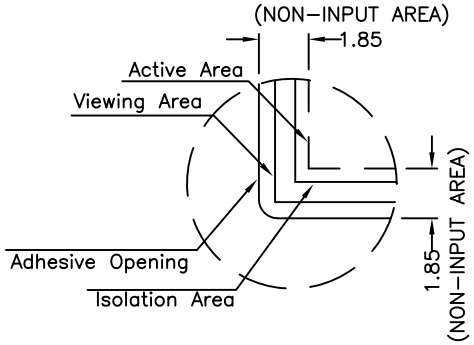
Fig. 7-2

TOUCH SIDE VIEW

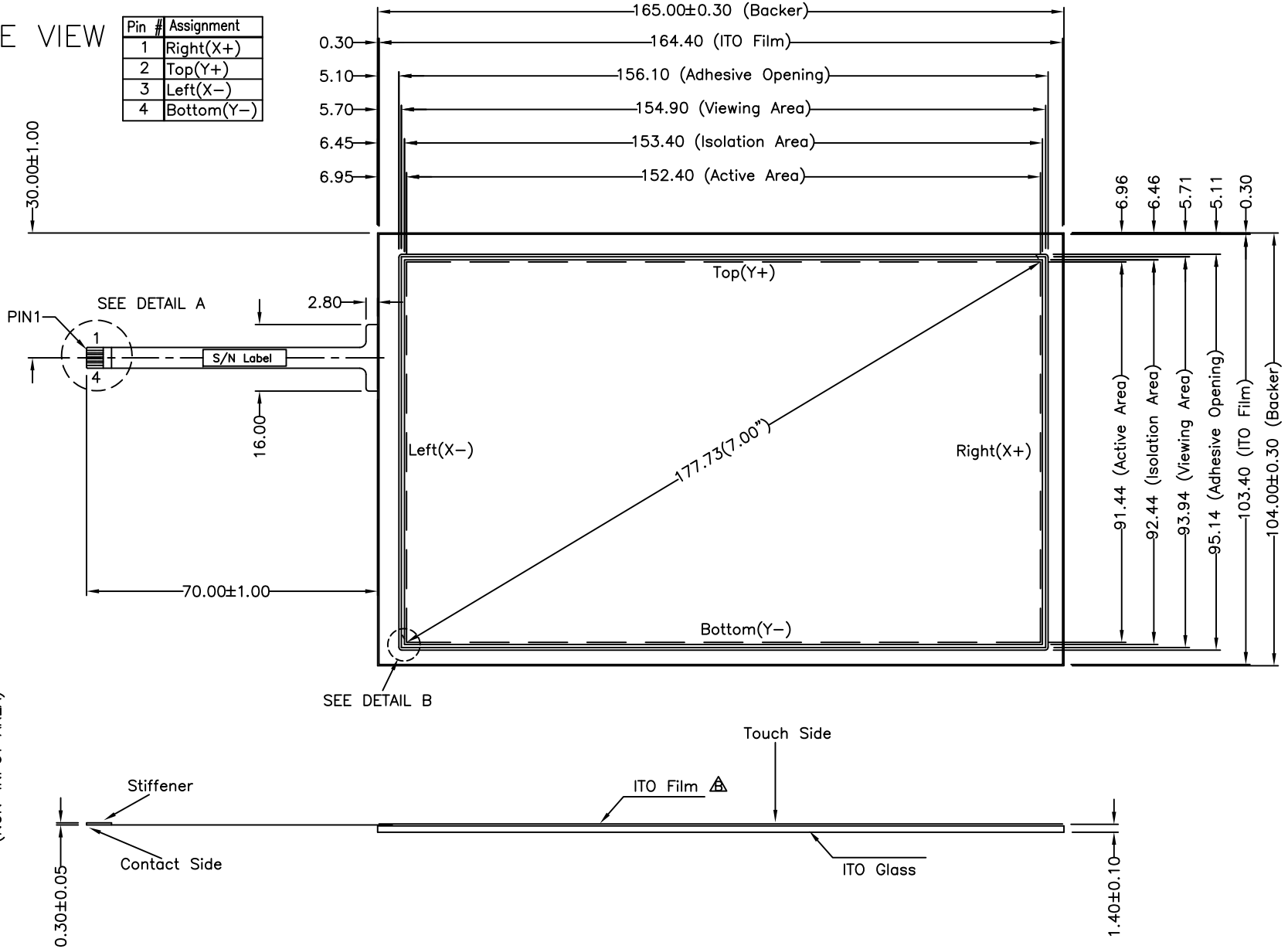
Pin #	Assignment
1	Right(X+)
2	Top(Y+)
3	Left(X−)
4	Bottom(Y−)



DETAIL A



DETAIL B



NOTES:

1. ITO GLASS THICKNESS : 1.10mm
2. OVERALL THICKNESS :1.40±0.10mm
3. CONNECTOR AND PINOUT AS INDICATED
4. FRONT SURFACE : ANTI−GLARE HARDCOAT
5. TAIL TYPE : IMMERSION GOLD PLATED FPC , ZIF
6. OTHER SPEC : SEE APPROVED SHEET