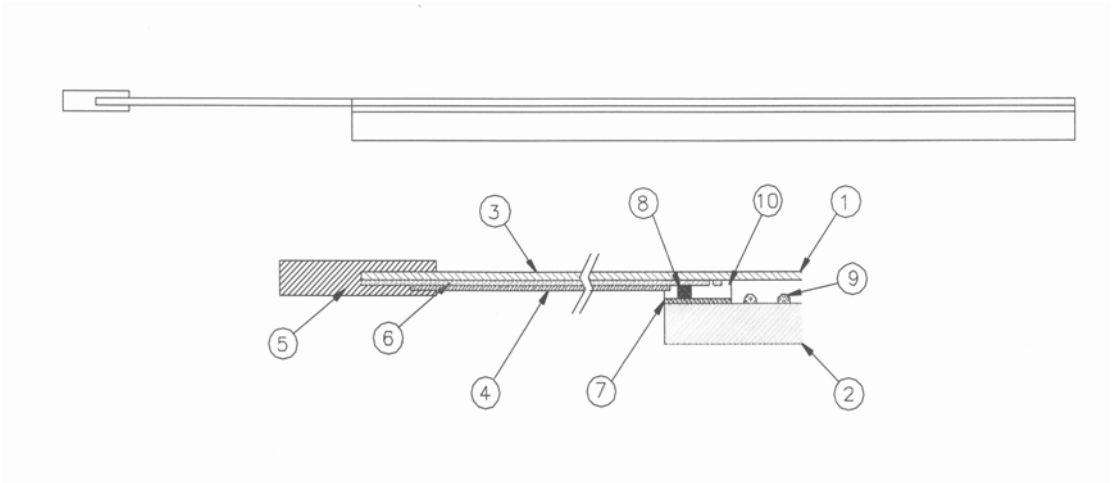
Analog 4-wire PET-On-Glass Touch Screen Specification

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	ITO PET (Top layer)	0.188mm ITO PET Film	Antiglare coating Surface hardness: 3H Resistance:300~600Ω/□
2	ITO Patterned Glass (Bottom layer)	1.57mm ITO Glass	Resistance:300~600Ω/□
3	Tail	PET Film	Integral to Top layer circuit
4	Tail insulation	PET Film	
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 ink	
9	Dot spacer	UV Cure ink	
10	Isolation Layer	Isolation Adhesive	

Touch screen side view:



Changes that contribute to technical improvement are subject to alternations

				2002	Datum	Name
				Bearb.	24.10.	Maurer
				Gepr.	24.10.	Maurer
				Vert.		

EDV-Datasheet

don't change manually

TOUCHSCREEN
5,77", 4 Wire

SPECIFICATIONS OF ANALOG RESISTIVE PET-ON-GLASS TOUCH SCREEN
Manufactured bei Apex Material Technology Corp.

SCHURTER

D 79346 Endingen

H 1070.0417

Blatt 1 von 5 Index: -

Zu	Änd.	Datum	Name

1.3 Input Method and Activation Force

Input Method	Average Activation Force
1.6mm dia. Delrin stylus	10~70 grams
16mm dia. Silicon "finger"	10~ 80 grams

2. Typical Optical Characteristics

2.1 Visible Light Transmission: >80%
2.2 Haze: 3~7 % (JIS K-7105)

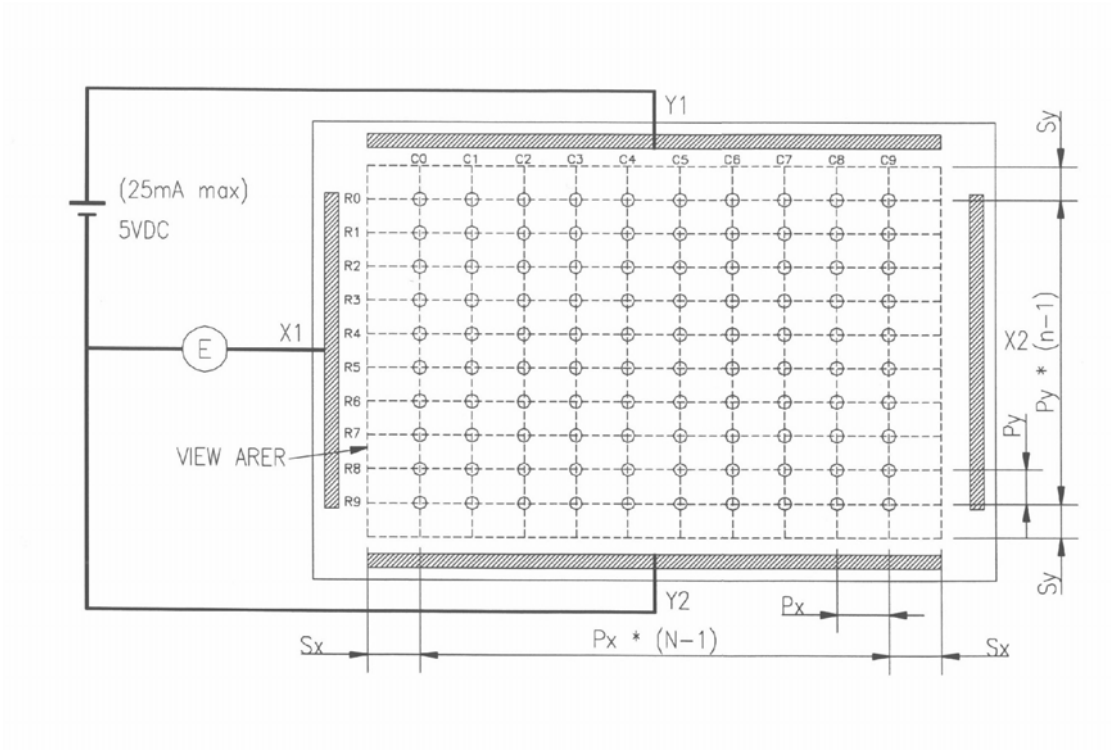
3. Electrical Specifications

3.1 Operating Voltage: 5.5V or less
3.2 Contact current: 20mA (maximum)
3.3 Circuit close resistance: X : 400~1000Ω Y : 200~650Ω
3.4 Circuit open resistance: > 10MΩ at 25VDC
3.5 Contact bounce: < 10ms
3.6 Linear Test : <1.5 %
3.7 Capacitance:100nF(maximum)

4. Linearity

4.1 Linear Test Specification
Direction X: <1.5 %
Direction Y: <1.5 %

4.2.1 Line Test Circuit for Y CoordinateAdd 5V between Y1 and Y2 touch the point C0R0 to C9R9 separately, and measure the voltage from X1 as the following drawing.



4.3 Calculate Linearity : For the First Row0

R0avg = (VC0 + VC1 + VC2 +- - - - - - - + VC9) ÷ 10

R0max = The maximum voltage in Row 0

R0min = The minimum voltage in Row 0

R0 linear1 = | R0 max – R0 avg. | ÷ R0 avg. * 100%

R0 linear2 = | R0 min – R0 avg. | ÷ R0 avg. * 100%

R0 linear = max (R0 linear1, R0 linear2)

4.4 For X Coordinate Test

Add 5 voltage between X1 and X2 touch the point C0R0 to C9R9 separately and measure the voltage from Y1 as the above drawing

4.5 Calculate Linearity : For the First Column0

C0avg = (VR0 + VR1 + VR2 +- - - - - - - + VR9) ÷ 10

C0max = The maximum voltage in Column 0

C0min = The minimum voltage in Column 0

C0 linear1 = | C0 max – C0 avg. | ÷ C0 avg. * 100%

C0 linear2 = | C0 min – C0 avg. | ÷ C0 avg. * 100%

C0 linear = max (C0 linear1 ,C0 linear2)

5. Environment Specification

5.1	Operating Temperatur	- 10° C ~ + 60° C	Humidity less than 90% RH
5.2	Storage Temperature	- 20° 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 120 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 -20□ for 120 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 60□, 90%RH for 120 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 -20□ 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, 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

7.2 Stylus writing
Touch panel is drawn by R0.8 Derlin stylus pen, at 250g forces, repeat one inch by 100K times. 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

8. Optical Performance

8.1 Optical inspection method and optical defect standards refer to document. A001-1; 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.

8.3 Silver Bus Pattern defect : Voids in traces to be less than 50% of the trace width.
8.3.1 Silver Bus Pattern gap: >0.1mm
8.3.2 Silver Bus and Active area gap: No silver ink may project beyond the viewing area.
8.3.3 Printed silver tails must not be bent to less than 4mm radius. Maximum number of bend repetitions is 10.

8.4 Glass defects such as edge chips and scratches refer to A001-1 Touch Screen Optical Quality Standard.

8.5 Others
8.5.1 Folding line should be avoided on the pressure sensitive adhesive.
8.5.2 Refer to document A001-1, Touch Screen Optical Quality Standard.
8.5.3 Always store the touch screen in its original shipping container under normal conditions (20~25°C, 65% RH)