

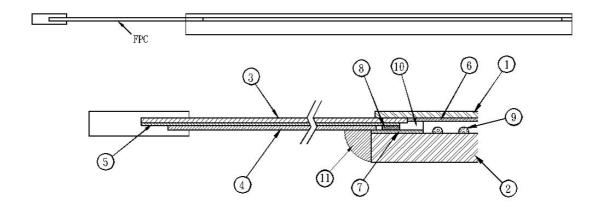
Analog 8-wire PET-On-Glass Touch Screen Specification

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
	ITO PET	0.188mm ITO PET Film	Antiglare coating
1	(Top layer)		Surface hardness: 3H
			Resistance:300~600Ω/□
2	ITO Patterned Glass (Bottom layer)	2.8mm ITO Glass	Resistance:300~600Ω/□
3	Tail Base	Kapton	Separated Tail
4	Tail cover lay	Kapton	
5	Connector	BERG connector	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	
11	Glue	UV Glue	

Touch screen side view:



						CI	hanges that contribute	e to technical improvement are subject to alternations		
				2007	Datum	Name				
				Bearb.	28.03.	Maurer	TOUCHSCREEN			
				Gepr.	28.03.	Maurer		15,0", 8-Wire		
				Vert.			AMT-09546-01			
				ED\	/-Datas	sheet	SPECIFICATIONS OF ANALOG RESISTI			
							PET-ON-GLASS TOUCH SCREEN			
				don't	change m	anually	Manufactu	ured by Apex Material Technology Corp.		
					100 700 100 100 100 100 100 100 100 100	HUR	1 Table 1 Tabl	H 1070.0479		
Zu	Änd.	Datum	Name		D 7934	46 Endin	gen	page 1 of 5 Index: -		



1.3 Input Method and Activation Force

Input Method	Average Activation Force
1.6mm Ø Delrin stylus	$0.1 \sim 0.7N$
16mm Ø Silicon "finger"	$0.1 \sim 0.8 \text{ N}$

2. Typical Optical Characteristics

2.1 Visible Light Transmission: > 80%2.2 Haze: < 13%

3. Electrical Specifications

3.1 Operating Voltage:
3.2 Contact current:
5.5V or less
20mA (maximum)

3.3 Circuit close resistance: $X:300-900\Omega$; $Y:200-700\Omega$

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)

4. Linearity

4.1 Linear Test Specification

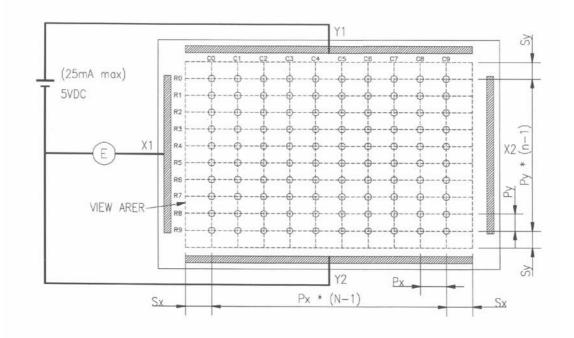
Direction X: < 1,5 % Direction Y: < 1,5 %

4.2 Line Test Circuit for Y Coordinate

Add 5V between Y1 and Y2 touch the point C0R0 to C9R9 separately, and measure the voltage from X1 as the following drawing.

						CI	hanges that contribute	e to technical improvemen	t are subject to alternations	
				2007	Datum	Name				
				Bearb.	28.03.	Maurer	TOUCHSCREEN 15,0", 8-Wire AMT-09546-01			
				Gepr.	28.03.	Maurer				
				Vert.						
				ED\	/-Datas	sheet	SPECIFICATIONS OF ANALOG RESISTIVE			
				1			PET-ON-GLASS TOUCH SCREEN Manufactured by Apex Material Technology Corp.			
				don't	change m	anually				
					411 Tellis (1997)	HUR	A	H 1070.04	79	
Zu	Änd.	Datum	Name	D 79346 Endingen page 2 of 5 Index: -						





4.3 Calculate Linearity: For the First Row0

$$R0avg = (VC0 + VC1 + VC2 + - - - - + VC9) \div 10$$

$$R0max = The maximum voltage in Row 0$$

$$R0min = The minimum voltage in Row 0$$

R0 linear1 =
$$\begin{vmatrix} R0 \text{ max} - R0 \text{ avg.} \end{vmatrix} \div R0 \text{ avg.} * 100\%$$

R0 linear2 = $\begin{vmatrix} R0 \text{ min} - R0 \text{ avg.} \end{vmatrix} \div R0 \text{ avg.} * 100\%$

R0 linear2 =
$$\begin{vmatrix} R0 & min - R0 & avg \end{vmatrix} \div R0 & avg * 100\%$$

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

$$C0avg = (VR0 + VR1 + VR2 + - - - - + VR9) \div 10$$

C0max = The maximum voltage in Column 0

C0min = The minimum voltage in Column 0

C0 linear1 = $\begin{vmatrix} C0 \text{ max} - C0 \text{ avg.} \\ \end{vmatrix} \div C0 \text{ avg.} * 100\%$

 $C0 \operatorname{linear2} = \left| \begin{array}{c} C0 \operatorname{min} - C0 \operatorname{avg.} \\ \end{array} \right| \div C0 \operatorname{avg.} * 100\%$

C0 linear = max (C0 linear1 ,C0 linear2)

	Name	Datum	2007				
TOUCHSCREEN	Maurer	28.03.	Bearb.				
15,0", 8-Wire	Maurer	28.03.	Gepr.				
AMT-09546-01			Vert.				
CATIONS OF ANALOG RESISTIVE	EDV-Datasheet SPECIFICATIONS OF ANALOG RESIST						
C-ON-GLASS TOUCH SCREEN	PE						
ctured by Apex Material Technology Corp.	anually Manufa	change ma	don't d				
H 1070.0479	HURTER NIC COMPONENTS	411 VANA - A. (607 - 11					
page 3 of 5 Index: -	D 79346 Endingen page 3 of 5						Zu



5. Environment Specification

5.1 Operating Temperature $-10^{\circ} \text{ C} \sim +60^{\circ} \text{ C}$ Humidity less than 90% RH

5.2 Storage Temperature $-40^{\circ} \text{ C} \sim +80^{\circ} \text{ C}$ at Ambient Humidity, no dew condensation

5.3 Humidity if temp. ≥40° C, humidity less than 80% RH if temp. <40° C, humidity less than 90% RH

No dew condensation

6. Reliability Test

6.1 Exposure to high temperature

Touch panel is put into a test machine at the condition of 80°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. 3.5Linearity test: as Sec. 3.6

6.2 Exposure to low temperature

Touch panel is put into a test machine at the condition of –40°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 60°C, 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 –40°C for 30 minutes, and then 80°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

						Cł	hanges that contribute	e to technical improvement are subject to alternations		
				2007	Datum	Name				
				Bearb.	28.03.	Maurer	TOUCHSCREEN			
				Gepr.	28.03.	Maurer	15,0", 8-Wire AMT-09546-01			
				Vert.						
				EDV-Datasheet SPECIFICATIONS OF A				ATIONS OF ANALOG RESISTIVE		
							PET-ON-GLASS TOUCH SCREEN			
				don't d	change ma	anually	Manufactured by Apex Material Technology Corp.			
				-	A. T.	HUR'	A	H 1070.0479		
Zu	Änd.	Datum	Name		D 7934	page 4 of 5 Index: -				



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. 3.5Linearity 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. 3.5Linearity test: as Sec. 3.6

8. Optical Performance

- 8.1 Optical inspection method and optical defect standards refer to document. A001-2 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.
- 8.4 Glass defects such as edge chips and scratches refer to A001-2, Touch Screen Optical Quality Standard.

9. Others

- 9.1 Always store the touch screen in its original shipping container under normal conditions (20~25°C, 65% RH)
- 9.2 RoHS, this part is RoHS compliant

						CI	hanges that contribute	e to technical improvement are subject to alternations	
				2007	Datum	Name			
				Bearb.	28.03.	Maurer	TOUCHSCREEN <i>15,0", 8-Wire</i> AMT-09546-01		
				Gepr.	28.03.	Maurer			
				Vert.					
				EDV-Datasheet SPECIFICATIONS OF ANALOG RESIST					
							PET-ON-GLASS TOUCH SCREEN Manufactured by Apex Material Technology Corp.		
				don't d	change ma	anually			
					10 0000	HUR	A	H 1070.0479	
Zu	Änd.	Datum	Name	D 79346 Endingen page 5 of 5 Index: -					