

Product Information

Issue Date: February 16, 2006

Model: TOUCHKIT-103

Note: The product and specification are subject to change without prior notice. Please contact your sales representative for the most current specifications.

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1. Scope

This specification applies to Product No.: TouchKIT-103

2. Warranty

Touch Panel products manufactured to this specification shall be warranted for the agreed upon term only when stored and used as specified under normal conditions pursuant to these specifications. The warranty shall become void if the Touch Panel products are not stored or used as specified herein.

3. Shape

Shape, structure and dimension are referred Counter Drawing.

4. Features

Type	4-Wire Analog Resistive Touch Panel	
Input Mode	Stylus or Finger	
Structure	ITO Film	175 μ m/188 μ m
	ITO Glass	1.1T
Connector	FPC	

5. Rating

5.1 Maximum Voltage & Current

Less than DC 7 volts, 1mA

- At the contact point of ITO Film (top layer) and ITO Glass(bottom layer))

5.2 Operating Temperature Range

- 20 $^{\circ}$ C to 60 $^{\circ}$ C (Humidity : 20% RH to 90% RH, No condensation of dew)

5.3 Storage Temperature Range

- 30 $^{\circ}$ C to 70 $^{\circ}$ C (Humidity : 20% RH to 90% RH, No condensation of dew)

6. Electrical Characteristics

6.1 Resistance between Lead

Direction "X" : 50 ~ 500 Ω

Direction "Y" : 500 ~ 1500 Ω

6.2 Linearity

X axis : \pm 1.5%

Y axis : \pm 1.5%

6.3 Insulation Resistance

20 M Ω or more at DC 25 V

6.4 Chattering Time
10 msec or less at 100k Ω Pull-up

7. Mechanical Characteristics

7.1 Input Method
•Stylus or Finger

7.2 Actuation Force
•Stylus : 80 g or less (R 0.8 Polyacetal pen)
•Finger : 250 g or less (R 8.0 HS40 °Sillicon Rubber)

7.3 Surface Hardness
•3H or more (according to JIS-K5400)

8. Optical Characteristics

8.1 Transmittance
80 % or more
* Measurement by SpectroPhotometer MINOLTA CM-3500d

9. Reliability

9.1 High Temperature Test

Touch Panel is put into a vessel at the condition of 80 °C for 240 hours.
Then it is left at room temperature for 24 hours or more.
The measurement must satisfy the following :

- ▶ Resistance between terminals : According to Section 6.1
- ▶ Linearity : According to Section 6.2
- ▶ Insulation Resistance : According to Section 6.3

9.2 Low Temperature Test

Touch Panel is put into a vessel at the condition of - 40°C for 240 hours.
Then it is left at room temperature for 24 hours or more.
The measurement must satisfy the following :

- ▶ Resistance between terminals : According to Section 6.1
- ▶ Linearity : According to Section 6.2
- ▶ Insulation Resistance : According to Section 6.3

9.3 Temperature & Humidity Test

Touch Panel is put into a vessel at the condition of 60°C and 90%RH for 240 hours. Then it is left at room temperature for 24 hours or more. The measurement must satisfy the following :

- ▶ Resistance between terminals : According to Section 6.1
- ▶ Linearity : According to Section 6.2
- ▶ Insulation Resistance : According to Section 6.3

9.4 Thermal Shock Test

Touch Panel is put into a vessel at the condition of - 40°C for 30 minutes and then 80°C for 30 minutes. This process is repeated by 10 cycles. Then it is left at room temperature for 24 hours or more. The measurement must satisfy the following :

- ▶ Resistance between terminals : According to Section 6.1
- ▶ Linearity : According to Section 6.2
- ▶ Insulation Resistance : According to Section 6.3

10. Durability

10.1 Writing Friction

Write 150,000 times in 30mm and measure the area.
Force : 250 gf, Speed : 60 mm/sec, Stylus : R0.8 Polyacetal tip
The measurement must satisfy the following :

- ▶ Resistance between terminals : According to Section 6.1
- ▶ Linearity : According to Section 6.2
- ▶ Insulation Resistance : According to Section 6.3

10.2 Punching Life

Touch Panel is hit two million times with R8.0 silicon rubber and measure it.
Force : 250 g, Speed : 2 times/sec
The measurement must satisfy the following :

- Resistance between Leads : According to Section 6.1
- Linearity : According to Section 6.2
- Insulation Resistance : According to Section 6.3

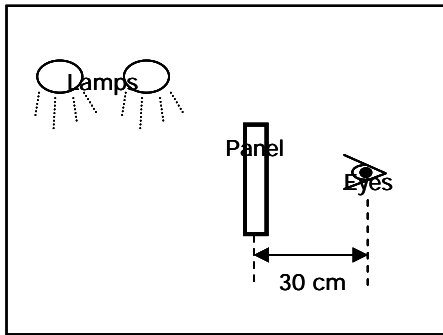
10.3 Heat Seal Peeling Strength

400 g/cm or more
(peeling upward by 90 °in direction of X , speed : 50 mm/min)

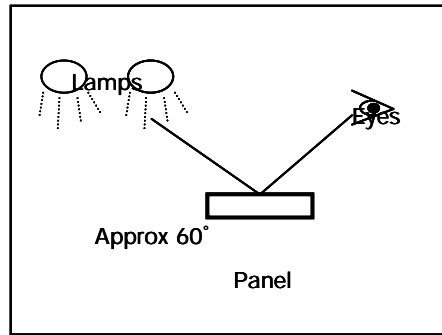
11. Cosmetic Inspection Criteria

The following are applied to viewing area. Any defects that are outside the viewing area shall be disregarded unless it affects the electrical performance of the product.

The inspection shall be performed by using two 14W fluorescent lamps. The panel shall be placed at 30cm away from eyes as shown below.



Transmitting light



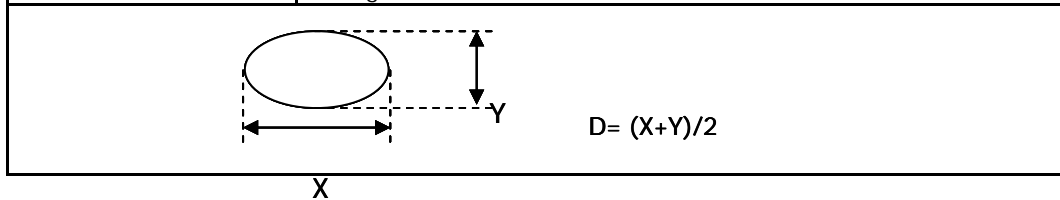
Reflecting light

11.1 Scratch

$W \leq 0.03\text{mm}$	In case of $L \leq 5\text{mm}$, it is disregarded
$0.03\text{mm} < W < 0.04\text{mm}$	In case of $L \leq 5\text{mm}$, it is disregarded in case the object is in a distance of $L < 15\text{mm}$ from any other objects or scratches. (2 or less) In case of $L > 5\text{mm}$, it is regarded as defects.
$W > 0.04\text{mm}$	In case $L > 5\text{mm}$, it is regarded as defects.

11.2 Granular Object

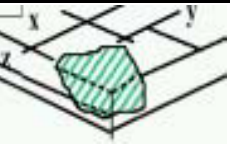
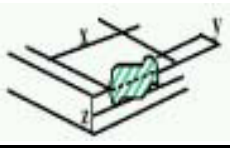
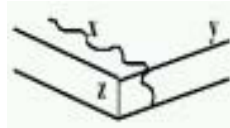
$D \leq 0.2\text{mm}$	Disregarded
$0.2\text{mm} < D \leq 0.3\text{mm}$	It is regarded as defects in case the object is in a distance of $< 15\text{mm}$ from any other objects or scratches. (2 or less)
$0.3\text{mm} > D$	It is regarded as defect.



11.3 Linear Object

$W \leq 0.03\text{mm}$	In case of $L \leq 3\text{mm}$, it is disregarded
$0.03\text{mm} < W < 0.04\text{mm}$	In case of $L \leq 3\text{mm}$, it is disregarded in case the object is in a distance of $L < 15\text{mm}$ from any other objects or scratches. (2 or less) In case of $L > 3\text{mm}$, it is regarded as defects.
$W > 0.04\text{mm}$	In case $L > 3\text{mm}$, it is regarded as defects.

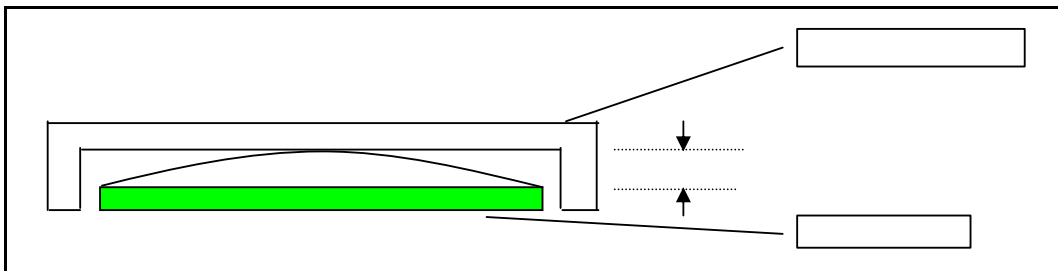
11.4 Glass breakage

	CRITERION & DECISION	
Corner breakage		$X \leq 2.0\text{mm}$ and $Y \leq 2.0\text{mm}$ and $Z \leq t/2 \text{ mm}$ It is ignored
Side breakage		$X \leq 2.0\text{mm}$ and $Y \leq 2.0\text{mm}$ and $Z \leq t/2 \text{ mm}$ It is ignored
Progressive		It is regarded as defective.

※ t : Glass Thickness

11.5 Puffness

Check Puffness with 0.4mm gauge



11.6 Newton's Ring

Subject to limited sample agreed between buyer and manufacturer

12. Inspection

12.1 Resistance between Lead

Criterion : According to Section 6.1

All the Touch Panels are inspected in the first production lot.
Sampling inspection from the second lot.

12.2 Linearity

Criterion : According to Section 6.2

All the Test Touch Panels are inspected in the first production lot.
Sampling inspection from the second lot.

12.3 Insulation Resistance

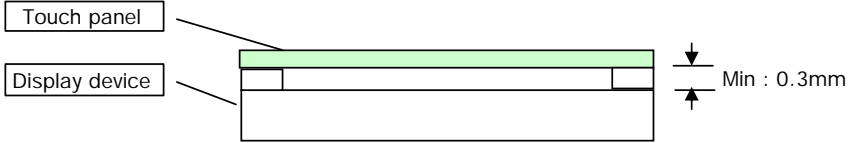
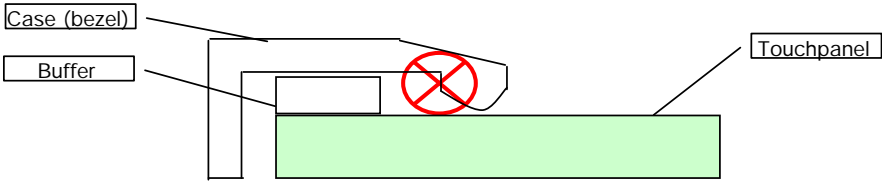
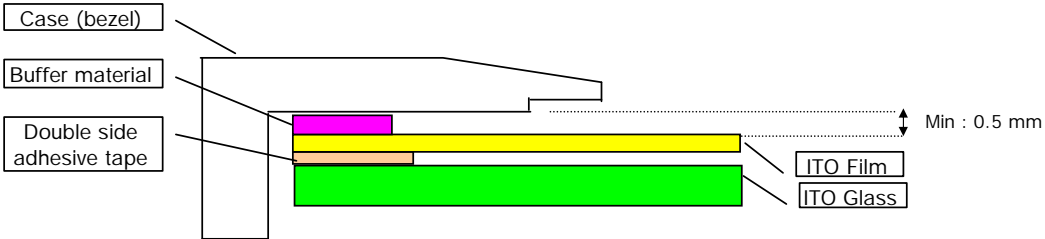
Criterion : According to Section 6.3

All the Touch Panels are inspected in the first production lot.
Sampling inspection from the second lot.

12.4 Appearance

Criterion : According to Section 11

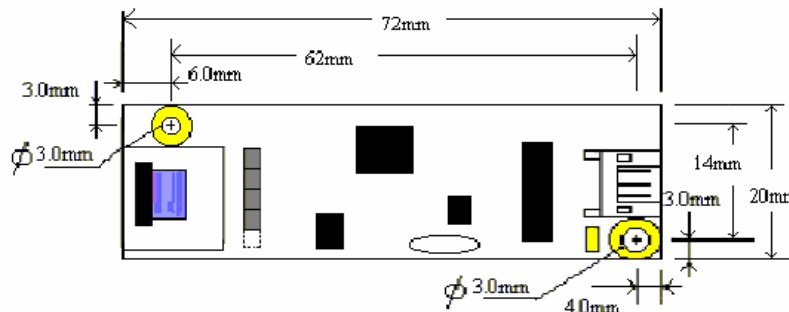
All the Touch Panels are inspected

13. Handling Remark	
Subject	Description
Storage	<ol style="list-style-type: none"> 1. Always store touch panel at Storage Environment. (Ref. 5.3) 2. Do not expose touch panels to direct ray of the sun. 3. Do not give shock and vibration to the product.
unpacking	<ol style="list-style-type: none"> 1. Open the box after checking the package is right side up 2. Do not grip and pull FPC when take out product. (in order to avoid disconnection.)
Handling	<ol style="list-style-type: none"> 1. Use gloves and masks when handing touch panels. (in order to avoid leaving fingerprint or spot.) 2. Do not touch Where tails are heat-sealed in order to avoid disconnection. 3. Hold touch panels around outside of viewing area. 4. Clean off touch panel with soft cloth dampened with alcohol when surface on the panel is dirty 5. Do not use organic solvents except alcohol. 6. Do not pile touch panels onto other touch panels. (The edge of the touch panel cause scratches on the surface of the other touch panels.) 7. Do not put heavy objects on the panel. 8. Handle with care from panels sharp edges. (because glass edges are sharp)
Assembly	<ol style="list-style-type: none"> 1. Please design housing which minimizes stress onto touch panels. 2. Please pay the best attention not create any stress to the heat-sealed tails. (Heavy stress may cause disconnection) 3. Please pay attention not to harm touch panels with your tools which may be used for assembling.
Housing Design (Case Design)	<ol style="list-style-type: none"> 1. Keep enough clearance (over 0.3mm) between the touch panel and flat-panel display to protect a display device and display surface fig 1. 
	<ol style="list-style-type: none"> 2. Avoid the bezel design as below. Because it can press the Active Area of the touch panel 
	<ol style="list-style-type: none"> 3. We recommend the use of a buffer material between the touch panel and the bezel. and buffer material should be limited only on the busbar area. If it is out of busbar area, touchpanel may occur a short 
Prohibitions & Operation	<ol style="list-style-type: none"> 1. Do not attach bezel to inside of panels viewing area. 2. Pevent excessive force on the touch panel. 3. Do not use a sharp things except finger or R0.8 stylus pen when operating. This may cause scratches to the touch panel surface 4. We recommend calibration after long time use.

15. Touch Panel Controller: 4-wire RS232

This touch panel controller provides the optimistic performance of your analog resistive touch panels for 4-wire models. It communicates with PC system directly through RS232 connector. You can see how superior the design is in sensitivity, accuracy and friendly operation. The touch panel driver emulates mouse left and right button function and supports operation systems, including Microsoft Windows XP, Windows 2000, Windows 95/98, Windows Me, Windows NT 4.0, Windows CE 2.12/3.0/.net, DOS, Linux RedHat, Linux Mandrake, Mac/OS 9 , etc.

Controller:



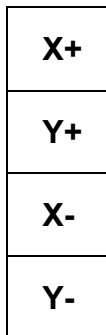
Specifications:

RS-232 Type Controller	
Circuit Board Dimension	20mm x 72mm (0.79inches x 2.84inches)----(4-Wire)
Power Requirements	D.C.+5V (100mA typical,50mV peak to peak maximum ripple and noise)
Operating Temperature	0 to 50 °C
Storage Temperature	-40 to 80 °C
Relative Humidity	95% at 60 °C
Interface	Bi-directional RS-232 serial communication
Protocol	No parity,8 data bits,1 stop bit,9600 baud(N,8,1,9600)
Report rate	RS232 Model: Max. 160 points/sec
Response time	Max. 35 ms
Attached Cable	6' shielded cable with 9-pin D-sub connector
Regulatory Approvals	FCC-B , CE,Unaffected by EMI from other nearby CRTs and other display devices
EMI	Unaffected by environmental EMI
Panel resistance	4 wire resistive model: 300 ~ 900 ohm

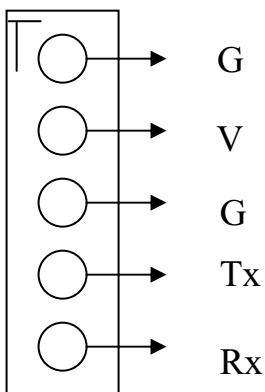
Product Package:

- (1) ETP-MB-4R0C (4 wire RS232 control board)
- (2) ETP-CB-SR00 (RS232 cable)
- (3) ETP-CB-4N00 (4 pin Flat cable)

Controller Panel Pin Assignment:



Controller Wafer Pin Assignment:



Flat Cable Pin Assignment:

