SPEC

Spec No.	TQ3C-8EA00-E1BZT03-00
Date	March 27, 2009

TYPE : KTP057ABAA-H00

< Touch panel>

CONTENTS

Issued
Date: Mar.30,2009
KYOCERA
Hayato LCD Division

KYOCERA CORPORATION
KAGOSHIMA HAYATO PLANT
LCD DIVISION

This specification is subject to change without notice.
Consult Kyocera before ordering.

Original Issue Date	Designed by: Engineering dept.			Confirmed by: QA dept.	
	Prepared	Checked	Approved	Checked	Approved
March 27, 2009	S.Ohtaka	K.Miyanohara	H.Hirakawa	J.Sakaguchi	

Warning

1. This Kyocera touch panel has been specifically designed for use only in electronic devices and industrial machines in the area of audio control, office automation, industrial control, home appliances, etc. The module should not be used in applications where the highest level of safety and reliability are required and module failure or malfunction of such module results in physical harm or loss of life, as well as enormous damage or loss. Such fields of applications include, without limitation, medical, aerospace, communications infrastructure, atomic energy control. Kyocera expressly disclaims any and all liability resulting in any way to the use of the touch panel in such applications.

2. Customer agrees to indemnify, defend and hold Kyocera harmless from and against any and all actions, claims, damages, liabilities, awards, costs, and expenses, including legal expenses, resulting from or arising out of Customer's use, or sale for use, or Kyocera touch panels in applications.

Caution

1. Kyocera shall have the right, which Customer hereby acknowledges, to immediately scrap or destroy tooling for Kyocera touch panels for which no Purchase Orders have been received from the Customer in a two-year period.

Revision record

Date	Designed by : Engineering dept.			Confirmed by : QA dept.	
	Prepared	Checked	Approved	Checked	Approved

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1. Application

This document defines the specification of KTP057ABAA-H00. (RoHS Compliant)

2. Construction and outline

Please refer the drawing for dimension, structure, and form.

Film type : AR Film

3. Mechanical specifications

3-1. Mechanical specifications of touch panel

Item	Specification		Unit
Input	Radius-0.8 stylus or Finger		-
Actuation Force	0.1～2.0		N
Operating life	Striking (Finger-input)	1 million	hits
	Sliding (Stylus–input)	100 thousand 1)	Characters
Transmittance	Typ. 85 (Typical value at full wavelength)		%
Reflectance	(Typ. 15) (550nm)		%
Surface hardness	Pencil hardness 2H or more according		-

1) 10mm sliding (back and forth)counts as 2 times.

4. Absolute maximum ratings

Item	Symbol	Min.	Max.	Unit
Operating temperature	T_{OP}	-30	85	°C
Storage temperature	T_{STO}	-40	95	°C
Operating humidity 1)	H_{OP}	10	2)	%RH
Storage humidity 1)	H_{STO}	10	2)	%RH
Vibration	-	3)	3)	-
Shock	-	4)	4)	-

1) Non-condensing

2)Temp.≦40°C, 85%RH Max.

Temp.＞40°C, Absolute humidity shall be less than 85%RH at 40°C.

3) The touch panel is installed on the LCD using double sided tape

Frequency	10～55 Hz	Acceleration value (0.3～9 m/s²)
Vibration width	0.15mm	
Interval	10-55-10 Hz 1 minutes	

2 hours in each direction X, Y, Z (6 hours total)

EIAJ ED-2531

4) The touch panel is installed on the LCD using double sided tape

Acceleration: 490 m/s², Pulse width: 11 ms

3 times in each direction: ±X, ±Y, ±Z

EIAJ ED-2531

5. Electrical characteristics

Item	Specification
Supply voltage for touch panel	5.0V
Boundary transit current	Max. 0.5mA
Terminal resistance	xL～xR : 200Ω～1200Ω
	yU～yL : 200Ω～1000Ω
Linearity	less than ±2.5%
Insulation resistance	50MΩ or more at DC25V
Chattering	Less than 10msec at ON/OFF.

6. Interface signals

No.	Symbol	Description
1	yU	y-Upper terminal
2	xL	x-Left terminal
3	yL	y-Lower terminal
4	xR	x-Right terminal

Touch panel side connector : 1.25mm pitch
Recommended matching connector : 04FFS-SP-GB-TF(LF)(SN) (JST)
: 00-8370-049-000-888+ (ELCO)

7. Design guidance for analog touch panel

7-1 Electrical (In customer's design, please remember the following considerations.)

1) Do not use the current regulated circuit.
2) Keep the current limit with top and bottom layer. (Please refer to “Electrical absolute maximum ratings” for details.)
3) Analog touch panel can not sense two points touching separately.
4) A contact resistance is appeared at the touch point between top and bottom layer. After this resistance has stable read of the touch panel position data.
5) Because noise of inverter or peripheral circuits may interfere signal of touch panel itself it is necessary to design carefully in advance to avoid these noise problem.

7-2 Software

1) Do the "User Calibration".
2) "User Calibration" may be needed with long term using. Include "User Calibration" menu in your software.
3) When drawing a line with a stylus, there may be a slight discontinuity when the stylus passes over a spacer-dot. If necessary, please provide a compensation feature within your software.

7-3 Mounting on display and housing bezel

1) Do not use an adhesive tape to bond it on the front of touch panel and hang it to the housing bezel.
2) This touch panel has an airtight but not watertight structure. Please not to use it for the applications requiring watertight or under the environments occurred condensation. If it is expected to be exposed to the environments that vapor, moisture or other liquids may seep inside a bezel, please be sure to take some measurements for drip-proof or waterproof by using sealing materials on the bezel.

8. Lot number identification

The lot number shall be indicated on the FPC tale.

KTP057ABAA-H00 - □□□□□□□□□ □□□

↓ ↓

1 2

No1. – No2. above indicate
1. Lot No. 9 digits
2. Serial 3 digits

9. Warranty

9-1. Incoming inspection

Please inspect the touch panel within one month after your receipt.

9-2. Production warranty

Kyocera warrants its touch panel's for a period of 12 months from the ship date. Kyocera shall, by mutual agreement, replace or re-work defective touch panel's that are shown to be Kyocera's responsibility

10. Precautions for use

10-1. Installation of the touch panel

1) The touch panel shall be installed flat, without twisting or bending.
2) Please design the housing window so that its edges are between the active area and the effective area of the touch screen.
   Must maintain a gap between inside of bezel and touch panel to avoid malfunction or electrode damage of touch panel.

10-2. Operation

1) The touch panel shall be operated within the limits specified. Operation at values outside of these limits may shorten life, and/or harm display images.
2) Do not use the touch panel in environments conducive to the formation of condensation.

10-3. Storage

1) The touch panel shall be stored within the temperature and humidity limits specified. Store in a dark area, and protect the touch panel from direct sunlight or fluorescent light.
2) Always store the touch panel so that it is free from external pressure onto it. This will prevent the formation of Newton's ring.

10-4. Usage

1) DO NOT store in a high humidity environment for extended periods. AR film degradation bubbles, and/or peeling off of the AR film may result.
2) Do not push or rub the touch panel's surface with hard to sharp objects such as knives, or the touch panel may be scratched.
3) When the touch panel is dirty, gently wipe the surface with a soft cloth, sometimes moistened by mild detergent or alcohol. If a hazardous chemical is dropped on the touch panel by mistake, wipe it off right away to prevent human contact.
4) Touch panel edges are sharp. Handle the touch panel with enough care to prevent cuts.
5) Always keep the touch panel free from condensation during testing. Condensation may permanently spot or stain the AR film.
6) Do not pull the touch panel FPC and do not bend the root of the wires. Housing should be designed to protect touch panel FPC from external stress.
7) This Kyocera touch panel has been specifically designed for use in general electronic devices, but not for use in a special environment such as usage in an active gas. Hence, when the touch panel is supposed to be used in a special environment, evaluate the touch panel thoroughly beforehand and do not expose the touch panel to chemicals such as an active gas.
8) The touch panel is made of glass. It may break when dropped, hit, or vibrated excessively. Please handle with care.

11. Reliability test data

Test item	Test condition	Test time	Judgement
High temp. atmosphere	95°C	240h	Touch panel function : No defect Touch panel quality : No defect Current consumption : No defect
Low temp. atmosphere	-40°C	240h	Touch panel function : No defect Touch panel quality : No defect Current consumption : No defect
High temp. humidity atmosphere	40°C 90% RH	240h	Touch panel function : No defect Touch panel quality : No defect Current consumption : No defect
Temp. cycle	-40°C 0.5h R.T. 0.5h 95°C 0.5h	10cycles	Touch panel function : No defect Touch panel quality : No defect Current consumption : No defect
High temp. operation	85°C	500h	Touch panel function : No defect Touch panel quality : No defect Current consumption : No defect
Point activation life	Polyacetal stylus R4, Hardness 60° Hitting force 2.9N Hitting speed 5 time/s	one million times	Touch panel function : No defect Insulation : No defect Linearity : No defect Actuation Force : No defect

1) Each test item uses a test touch panel only once. The tested touch panel is not used in any other tests.

2) The touch panel is tested in circumstances in which there is no condensation.

3) An operational test was performed after the following conditions.
First, the touch panel was left for a certain time under 5V voltages applied (without touch), and then it was left under the room temperature for 2 hours.

4) The reliability test is not an out-going inspection.

5) The result of the reliability test is for your reference purpose only.
The reliability test is conducted only to examine the touch panel's capability.

12. Test condition

12-1.Operating life

1) Condition

Test on Active area

Striking (Finger-input)

Testing rod	Silicon rubber (Hardness:60°), Tip : R = 4.0
Voltage	DC5V
Load	2.94N
Cycle	5hits/sec

Sliding (Stylus–input)

Testing rod	Polyaceral resin, Tip : R = 0.8
Load	2.45N
Input length	10mm
Input speed	50mm/sec

2) Judgement

No defect in function.

No appearance defect which causes trouble to use.

The specification should be followed the spec.

12-2. Terminal Resistance Test

1) Condition

Top and bottom electrodes are measured at the terminal.

2) Judgement

Must satisfy the specification.

12-3. Insulation Resistance Test

1) Condition

Top and bottom electrodes are measured at the terminal.

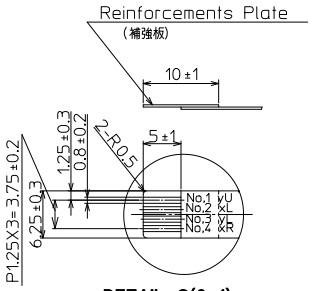
2) Judgement

Must satisfy the specification.

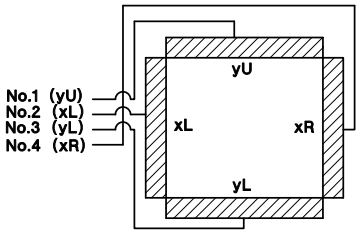
No	Description	Drawn	Checked	Checked	Approved

Note.(注記)

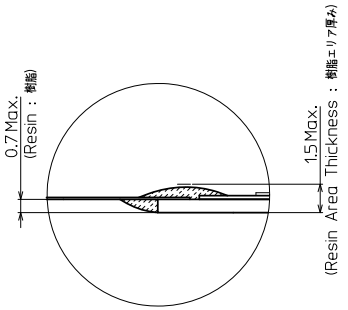
	Name(名称)	Explanation(説明)
1	T.P.	Touch panel (タッチパネル)
2	T.P. Active Area (T.P.アクティブエリア)	Operating area of touch panel (タッチパネルの動作範囲)
3	T.P. Viewing Area (T.P.ビューイングエリア)	Warranty area of touch panel's appearance (タッチパネルの外観(傷・異物等)保証範囲)
		By giving pressure between the active area and the viewing area of the touch panel, there is a possibility that the touch panel will operate. (タッチパネルアクティブエリアとタッチパネルビューイングエリア間は荷重をかけた場合は、タッチパネルが動作する可能性があります。)



DETAIL C(2:1)



Touch Panel Pin-assign
(タッチパネル ピンアサイン)



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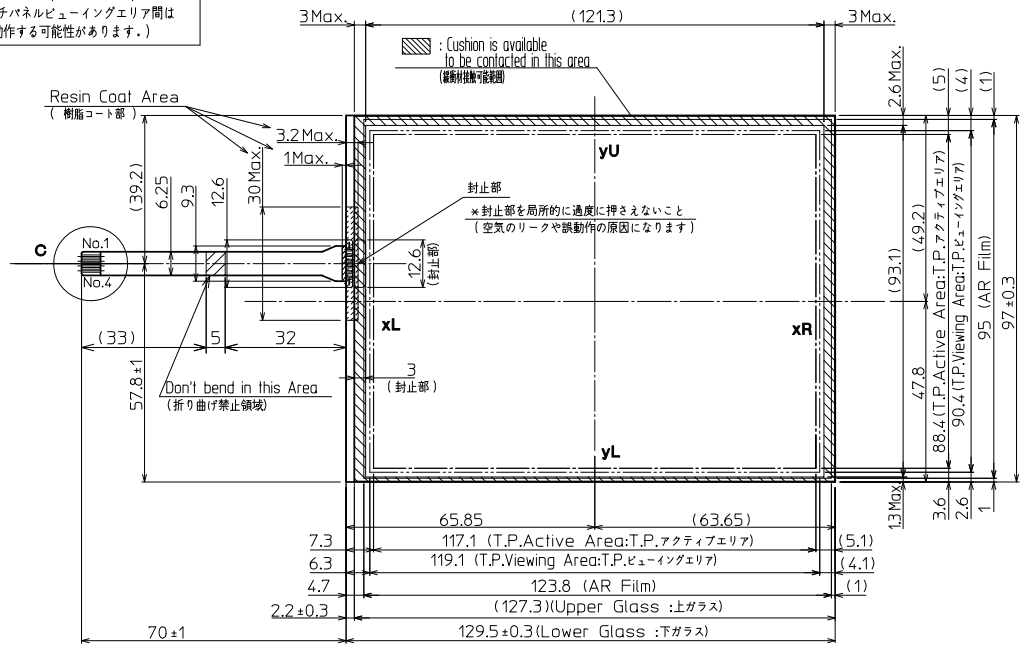

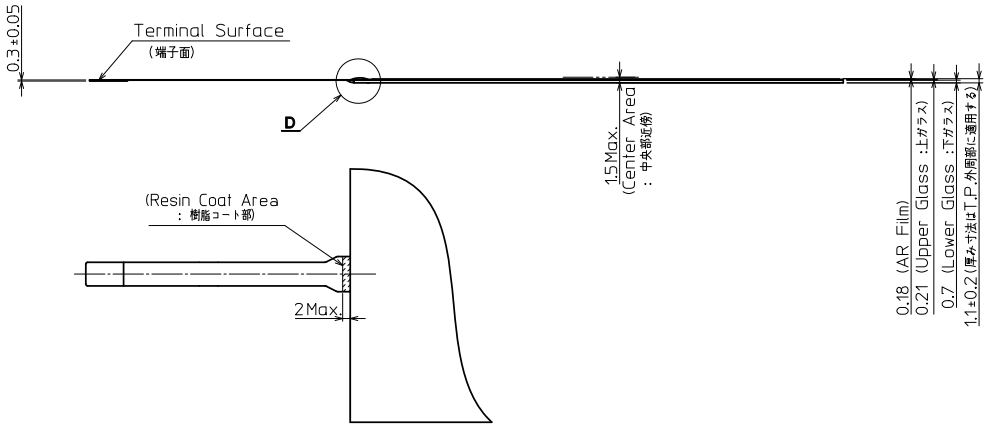

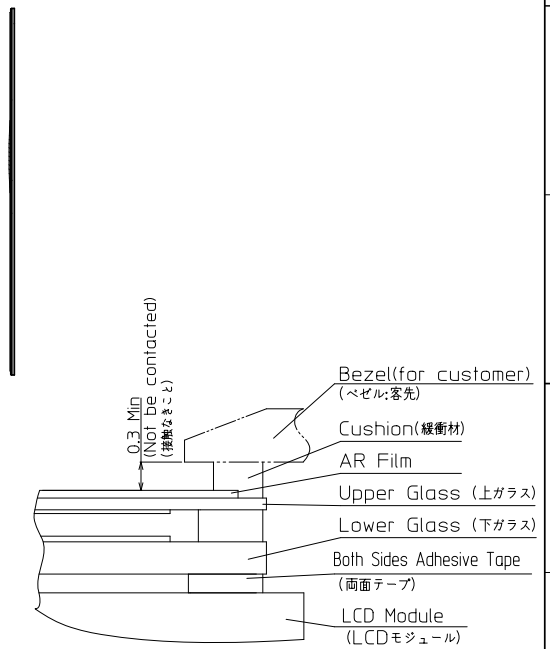

(NTS)

Precaution in use of touch panel.
(タッチパネル使用上の注意事項)

1. Fix touch panel at LCD module and the rear side of touch panel.
(タッチパネルの固定はLCDモジュール側とタッチパネル裏面とで行なうこと)
2. Must maintain a gap between inside of bezel and touch panel to avoid malfunction or electrode damage of touch panel.
(ベゼル内側とタッチパネルの接触厳禁。
誤動作や電極破損の原因となります)
3. Tolerance without indication : ±0.5
(指示無き公差)

Material 材質	Treatment 処理	Approved '08.10.10	Checked	Checked '08.10.10	Drawn	Scale 1:1(2:1, 5:1,NTS)	Title KTP057AB-H00	KYOCERA	Year-Month-Day '08.10.10
Quantity 製作数	Description; RoHS 備考	朝倉		鶴崎	小川		T.P. Outline Dimensions	Drawing No. 121A5083300	Size 2

Spec No.	TQ3C-8EA00-E2BZT03-00
Date	March 27, 2009

KYOCERA INSPECTION STANDARD

TYPE : KTP057ABAA-H00

KYOCERA CORPORATION
KAGOSHIMA HAYATO PLANT
LCD DIVISION

Original Issue Date	Designed by : Engineering dept.			Confirmed by : QA dept.	
	Prepared	Checked	Approved	Checked	Approved
March 27, 2009	S.Ohtaka	K.Miyanohara	N.Hirakawa	J.Sakaguchi	

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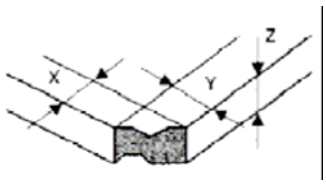
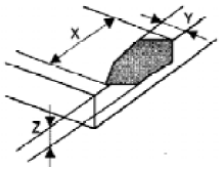
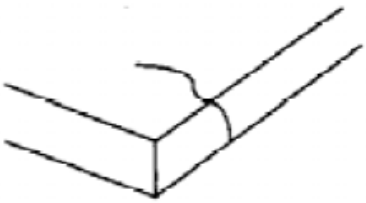
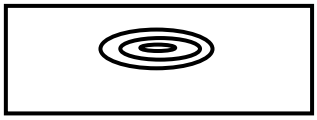
Visuals specification

1) Note

	Note		
General	1. Customer identified anomalies not defined within this inspection standard shall be reviewed by Kyocera, and an additional standard shall be determined by mutual consent. 2. This inspection standard about the image quality shall be applied to any defect within the active area and shall not be applicable to outside of the area. 3. Inspection conditions Luminance : 500 Lux min. Inspection distance : 300 mm. Temperature : 25 ± 5℃ Direction : Directly above		
Definition of inspection item	Touch Panel (Scratch , Foreign particle)		Describes scratches on the glass and AR film and foreign particles between glass/glass or glass/film.

2) Standard

<table>
<tr><th>Inspection item</th><th>Judgement standard</th></tr>
<tr><td>Scratch,
Foreign particle
(Touch screen portion)</td><td>
(W = Width, L = Length, D = Diameter = (major axis＋minor axis)/ 2)
<table>
<tr><th>Item</th><th>Width(mm)</th><th>Length(mm)</th><th>Acceptable number</th></tr>
<tr><td rowspan="4">Scratch</td><td>W ≦ 0.03</td><td>L ≦ 20</td><td>Neglected</td></tr>
<tr><td>0.03 ＜ W ≦ 0.05</td><td>L ≦ 10</td><td>2pces within ϕ20mm</td></tr>
<tr><td>0.05 ＜ W ≦ 0.08</td><td>L ≦ 6</td><td>2pces within ϕ20mm</td></tr>
<tr><td>0.08 ＜ W ≦ 0.1</td><td>L ≦ 4</td><td>1pces within φ30mm</td></tr>
<tr><td rowspan="2">Foreign
(line like)</td><td>W ≦ 0.05</td><td>Neglected</td><td>Neglected</td></tr>
<tr><td>0.05 ＜ W ≦ 0.1</td><td>L ≦ 5</td><td>2pces within ϕ30mm</td></tr>
<tr><td rowspan="2">Foreign
(circle like)</td><td colspan="2">D ≦ 0.2</td><td>Neglected</td></tr>
<tr><td colspan="2">0.2 ＜ D ≦ 0.3</td><td>2pces within ϕ30mm</td></tr>
</table>
Above are applied to the visible area.
Unless there are foreign particle and damage affected seriously to the electrical performance out of the active area, we approve of this product.
</td></tr>
<tr><td>Glass crack
(Touch screen portion)</td><td>
<table>
<tr><th>Item</th><th colspan="3">Size (mm)</th><th>Acceptable number</th></tr>
<tr><td>Conner crack</td><td rowspan="3">  </td><td>X</td><td>≦3</td><td rowspan="3">2 pcs
/panel</td></tr>
<tr><td>Y</td><td>≦3</td></tr>
<tr><td>Z</td><td>＜t</td></tr>
<tr><td>Crack in other area than in corner</td><td rowspan="3">  </td><td>X</td><td>≦5</td><td rowspan="3">2 pcs
/side</td></tr>
<tr><td>Y</td><td>≦1.5</td></tr>
<tr><td>Z</td><td>＜t</td></tr>
<tr><td>Progressive crack</td><td colspan="3">  </td><td>0 pcs
(NG even 1pcs)</td></tr>
</table>
Above are applied to the visible area.
Unless there are foreign particle and damage affected seriously to the electrical performance out of the active area, we approve of this product.
</td></tr>
<tr><td>Newton’s ring</td><td>
All Newton Rings in the center of the screen must be rejected.
Border around the screen are permitted.

N G

O K
</td></tr>
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