SPECIFICATIONS FOR
LCD MODULE

MODEL NO.
TP12864AAC0$
VER.01

FOR MESSRS:

_____

ON DATE OF:

_____

APPROVED BY:

_____

BOLYMIN, INC.
13F-1, 20, TA-LONG RD., TAICHUNG CITY 403, TAIWAN, R.O.C.
WEB SITE:http://www.bolymin.com.tw TEL:+886-4-23293029 FAX:+886-4-23293055

History of Version

Version	Contents	Date	Note
01	NEW VERSION	2009/08/04	SPEC.

C O N T E N T S

1. RANGE OF APPLICATION

These specifications are applied to analog touch panel.

2. FEATURES

2.1 Type: Analog Resistive Type Touch Panel
Input Mode: Special Stylus or Finger

Material	Requirement	Specification	Unit
PET	Clear ITO Film	188	μm
Glass	General	1.1	mm
Connector	FPC	1.0（pitch）× 50.0（L）	mm

2.2 General Specifications

Item	Specification	Unit
Dimensional Outline	50.2（W）× 80.1（L）×1.4（T）	mm
Viewing Area	40.0（W）× 72.0（L）	mm
Active Area	35.0（W）× 68.0（L）	mm

Shape, structure and dimension as per drawing.

3. RATING

3.1 Maximum voltage and current
DC7V
3.2 Usable temperature range
From -10℃ to 50℃ (Humidity from 20% to 90%, no dew condensation shall be acceptable)
3.3 Storage temperature range (Before assembling ”PAN JIT Touch Panel”)
From -20℃ to 70℃ (Humidity from 20% to 90%, no dew condensation shall be acceptable)

4. ELECTRICAL PERFORMANCE

4.1 Resistance between terminals
Direction ”X”: 170 ~ 390Ω.
Direction ”Y”: 310 ~ 990Ω.
4.2 Linearity
Direction ”X”: 1.5% or less.
Direction ”Y”: 1.5% or less.
4.3 Insulation resistance
DC25V and 20MΩ or more
4.4 Chattering
10msec or less

5.MECHANICAL PERFORMANCE

5.1 Input

Through a special stylus or finger

5.2 Activation force

Input with finger: 100g or less.

Input with stylus: 100g or less.

5.3 Surface hardness

≧2H

6. OPTICAL PERFORMANCE

6.1 Optical clarity

Total transmission 80% or more

7. RELIABILITY

7.1 Exposure to high temperature

Put it in a vessel at the condition of 70℃ ±2℃ for 240 hours. Moreover, let it alone for 24 hours or more in a room temperature and measure it. The measurement must satisfy the following:

-Resistance between terminals: According to Section 4.1.

-Linearity: According to Section 4.2.

-Insulation resistance: According to Section 4.3.

7.2 Exposure to low temperature

Put it in a vessel at the condition of -20℃ ±2℃ for 240 hours. Moreover, let it alone for 24 hours or more in a room temperature and measure it. The measurement must satisfy the following:

-Resistance between terminals: According to Section 4.1.

-Linearity: According to Section 4.2.

-Insulation resistance: According to Section 4.3.

7.3 Exposure to high temperature and high humidity

Put it in a vessel at the condition of 60℃ ±2℃ and 90% ±3% RH for 240 hours. Moreover, let it alone for 24 hours or more in a room temperature and measure it. The measurement must satisfy following：

-Resistance between terminals: According to Section 4.1.

-Linearity: According to Section 4.2.

-Insulation resistance: According to Section 4.3.

7.4 Thermal Shock Test

Touch Panel is put into a vessel at the condition of -20℃ ±2℃ for 1 hour and then 80℃ ±2℃ for 1 hour. This process is repeated by 10 cycles. Then it is left at room temperature for 24 hours of more. The measurement must satisfy the following:

-Resistance between leads: According to Section 4.1.

-Linearity: According to Section 4.2.

-Insulation resistance: According to Section 4.3.

8. DURABILITY

8.1 Point activation life

Hit it one million times with a silicon rubber of R 0.8, Hs 60 and measure it. The measurement must satisfy the under-mentioned items. Hitting force shall be 250g and hitting speed 3 times per second.

-Resistance between terminals: According to Section 4.1.
-Linearity: According to Section 4.2.
-Insulation resistance: According to Section 4.3.

8.2 Hand writing friction resistance

Write one hundred thousand capital and small alphabetical characters with a special stylus in an area 20mm×20mm and measure it. The measurement must satisfy the under-mentioned items. Writing force shall be 250g and writing speed 3,000 characters per hour.

-Resistance between terminals: According to Section 4.1.
-Linearity: According to Section 4.2.
-Insulation resistance: According to Section 4.3.

9. INSPECTION SPECIFICATION

9.1 Resistance between terminals

Criterion: According to section 4.1.
Number of products to be inspected: All products in the first lot.
Sampling inspection from the second lot.

9.2 Linearity

Criterion: According to section 4.2.
Number of products to be inspected: All products in the first lot.
Sampling inspection from the second lot.

9.3 Insulation resistance

Criterion: According to section 4.3.
Number of products to be inspected: All products in the first lot.
Sampling inspection from the second lot.

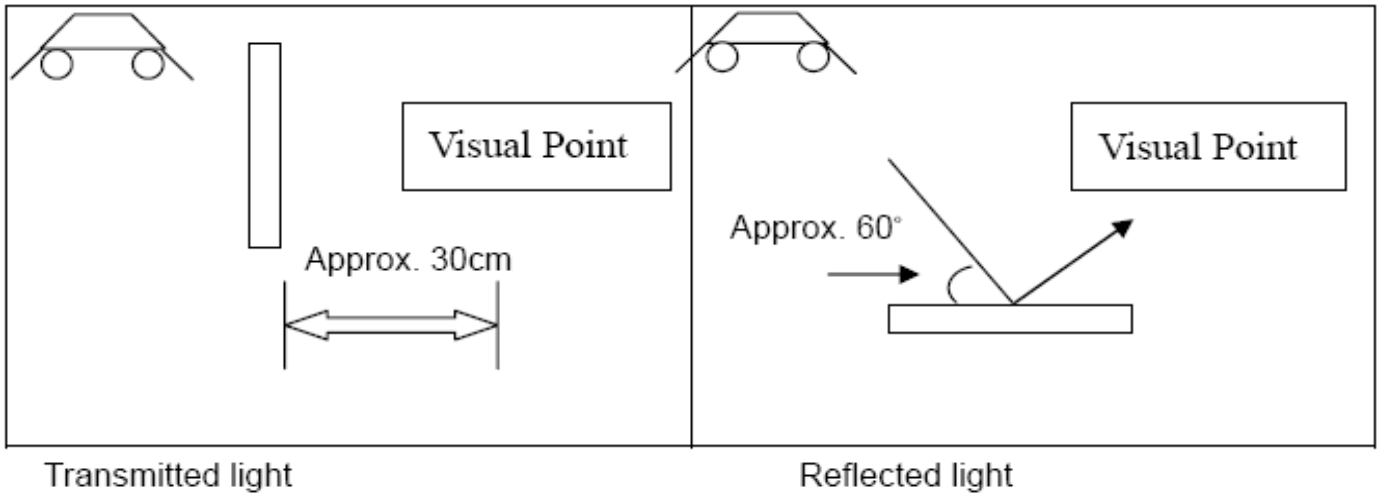
9.4 Appearance

Criterion: According to section 10.2.
Number of products to be inspected: All products in the first lot.
Sampling inspection from the second lot.

10. VISUAL CRITERION

10.1 How to inspect

A man or woman, who has good health and has 1.0/1.0 visions with or without glasses, shall inspect 30cm away from it. Twin fluorescent lamps and three-wave type shall be used. The visual inspection shall be executed under the conditions shown below and both background and desktop shall be black:



10.2 Criterion

The under-mentioned items (1)-(5) shall apply in a visible area. Any invisible area shall be acceptable unless any scratch or irregularity, which affects electrical performance, is observed. Criterion of visual inspection shall be according to a limit sample.

(1) Scratch

Width	Length	Criterion
W＜0.05mm	—	Acceptable
0.05mm≦W＜0.10mm	L≦5mm	Acceptable if such foreign objects are 2 or less
0.10mm≦W	—	Unacceptable

(2) Granular foreign object

Diameter	Criterion
D≦0.25mm	Acceptable
0.25mm＜D≦0.35mm	Acceptable if 4 or less
0.35mm＜D	Unacceptable

(3) Linear foreign object

Width	Length	Criterion
W＜0.05mm	—	Acceptable
0.05mm≦W＜0.10mm	L≦5mm	Acceptable if such foreign objects are 3 or less
0.10mm≦W	—	Unacceptable

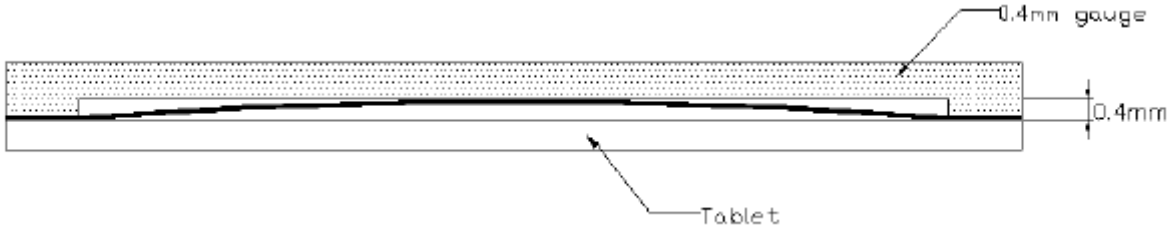
(4) Bubble on film

Diameter	Criterion
D≦0.25mm	Acceptable
0.25mm＜D≦0.50mm	Acceptable if such foreign objects are 3 or less
0.50mm＜D	Unacceptable

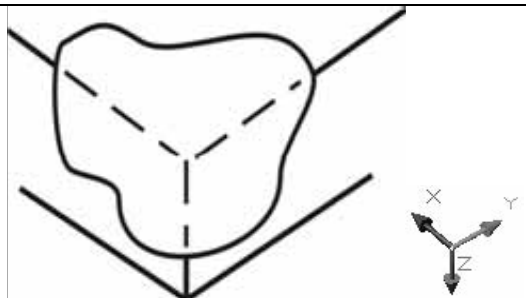
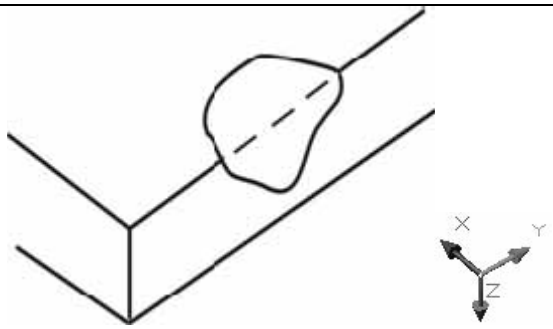
(5) Breakage on film surface
Not acceptable

(6) Newton rings
According to a limited sample

(7) Puffiness
Check through any 0.4mm gauge whether a panel surface film does not contact a measuring face.



(8) Breakage on glass

	Breakage on corner			Breakage on any area other than corner		
Judgment						
Criterion						
	X	Y	Z	X	Y	Z
Unit: mm	OK≦3	OK≦3	OK≦T	OK≦3	OK≦3	OK≦T

If any value of “X”, ”Y” and “Z” is out of allowable range, it shall be regarded as defective.

11. STOCKING NOTES

11.1. Do not pile up the products nor put any heavy thing on it.
11.2. Do not give any shock or vibration to the product and not drop it.
11.3. Stock at the room temperature away from chemicals as damage as acid and alkali could effect to panel.

12. TAKING AND CLEARING

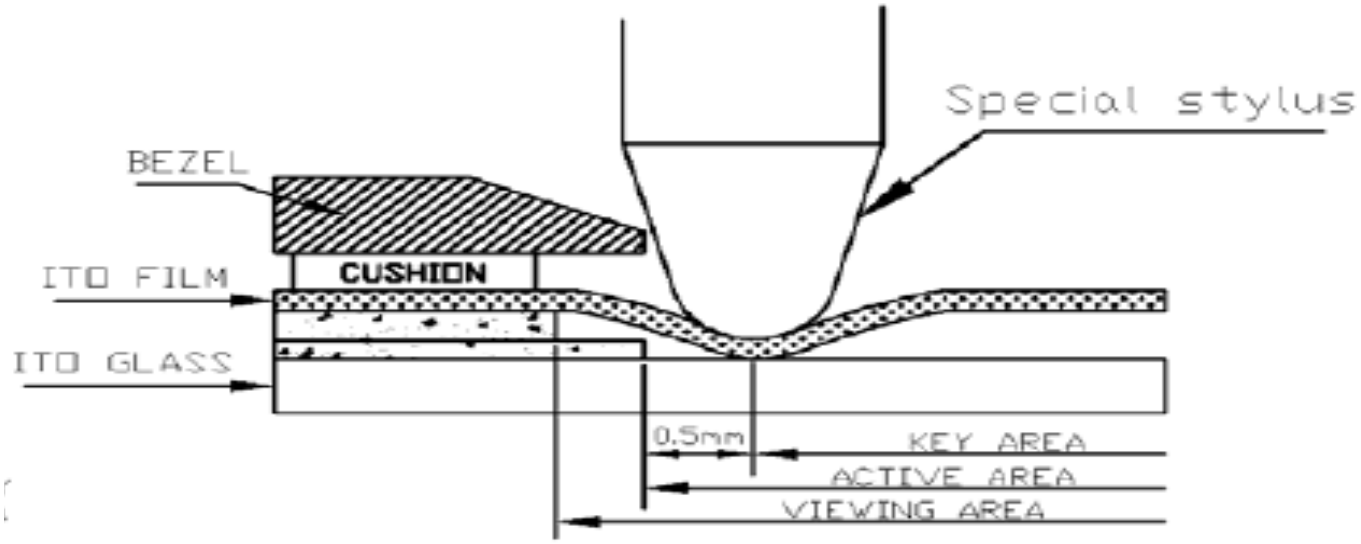
12.1. To hold the glass edge carrying upon the products to avoid sticking dirt or scratches on the film.

12.2. Do not pull and drag forcibly to the tail, bending it will damage or break.

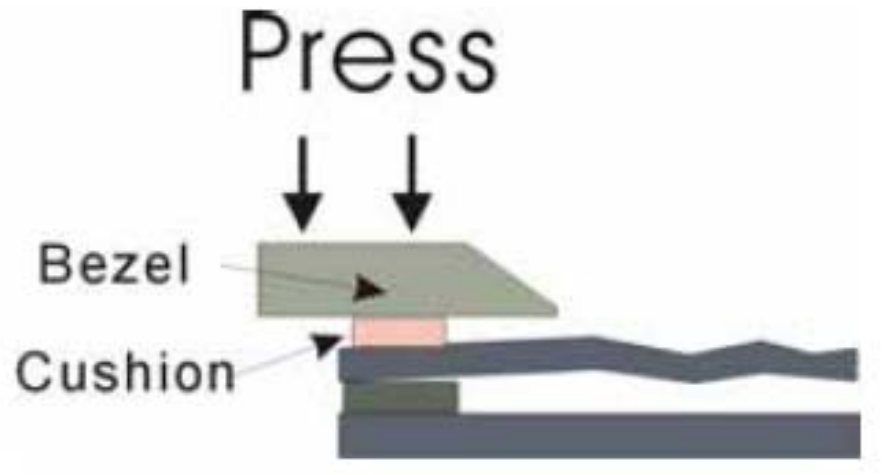
12.3. Use 80% alcohol with Non-Woven Wiper to clear the panel surface don't use any acids or alkali liquids detersive .

13. MOUNTING NOTES

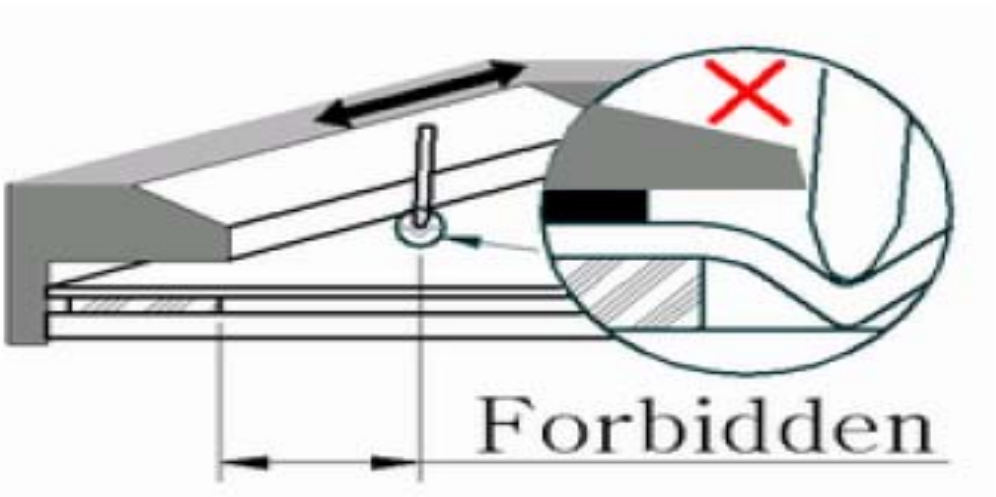
13.1 Bezel edge must be posited between Key Area and Viewing Area, if the edge enters the Key area may cause unexpected input if the gap to narrow.



13.2 If a cushion is used between bezel and film must be choose as free as enough to absorb the expansion and contraction to avoid the distortion of film.

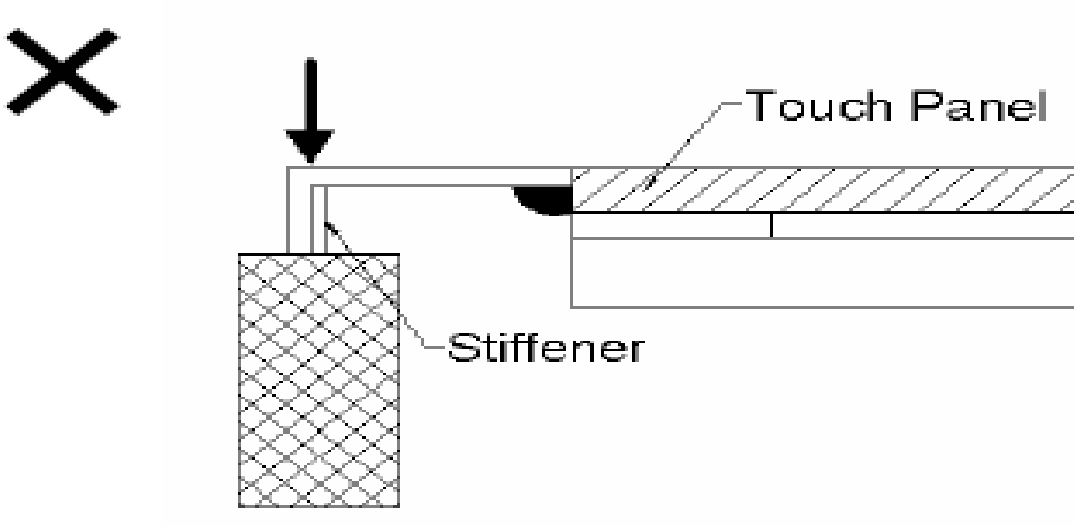


13.3 The area from Viewing Area 2mm is structurally weak for pressure, especially for pen use, the film may be forcibly bent and cause defection. This area must be protected by the bezel and Input must be avoided.

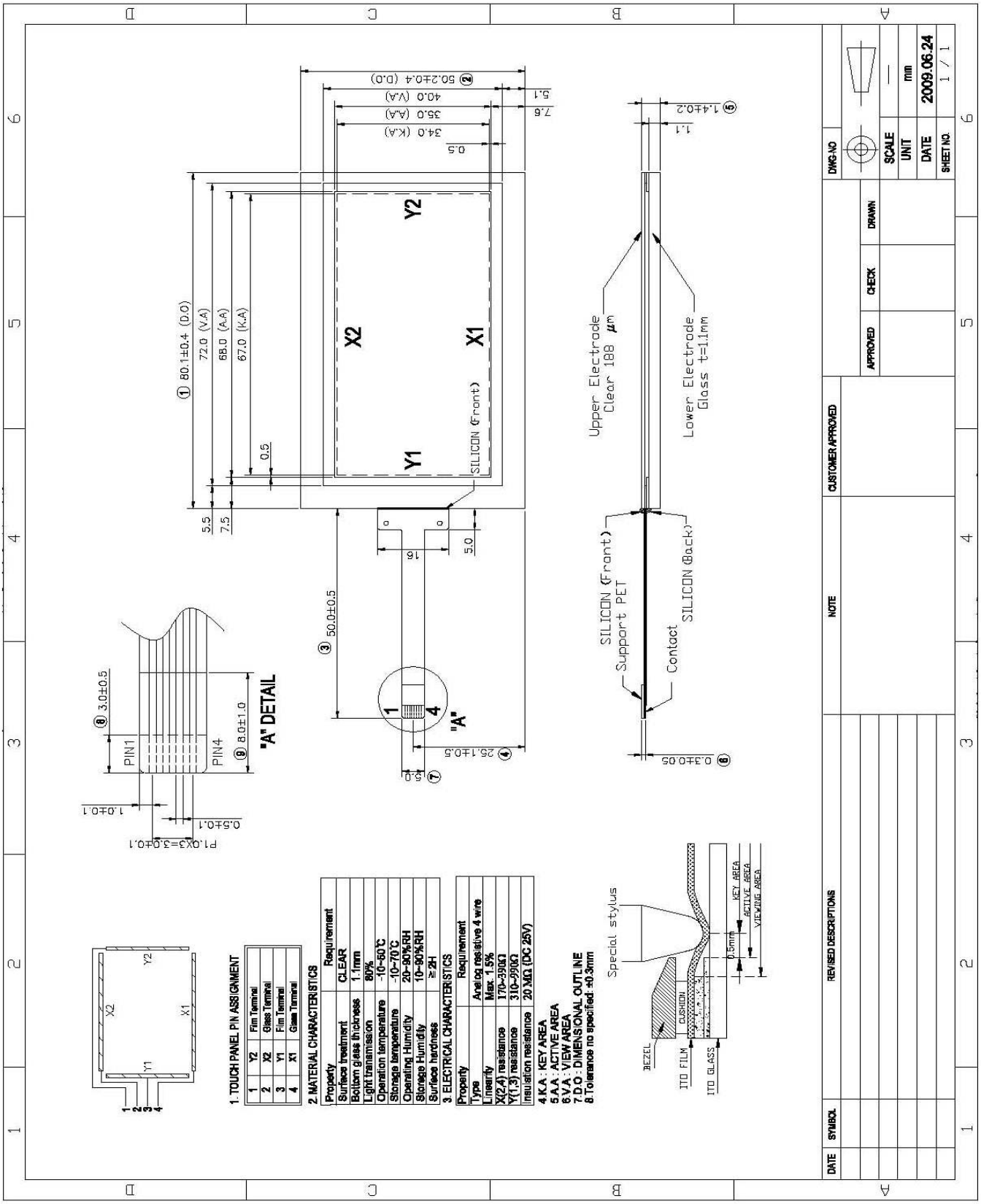


13.4 Most of the touch screens have air vent to equalize the inside air pressure to the outside one. The air vent must be open and liquid contact must be avoided as the liquid may be absorbed if the liquid is accumulated near the air vent.

13.5 Don't insert cable line like follow drawing could cause the tail broken.



14.DRAWING


1. TOUCH PANEL PIN ASSIGNMENT
1 Y2 Film Terminal
2 X2 Glass Terminal
3 Y1 Film Terminal
4 X1 Glass Terminal
2. MATERIAL CHARACTERISTICS
Property Requirement
Surface treatment CLEAR
Bottom glass thickness 1.1mm
Light tranamission 80%
Operation temperature -10~60℃
Storage temperature -10~70℃
Operating Humidity 20~80%RH
Storage Humidity 10~80%RH
Surface hardness ≥ 2H
3. ELECTRICAL CHARACTERISTICS
Property Requirement
Type Analog resistive 4 wire
Linearity Max. 1.5%
X(2,4) resistance 170~390Ω
Y(1,3) resistance 310~990Ω
Insulation resistance 20 MΩ (DC 25V)
4.KA : KEY AREA
5.AA : ACTIVE AREA
6.VA : VIEW AREA
7.D.O : DIMENSIONAL OUTLINE
8.Tolerance no specified: ±0.3mm
"A" DETAIL
PIN1
PIN4
SILICON (Front)
Upper Electrode
Clear ITO μm
Lower Electrode
Glass t=1.1mm
Support PET
Contact
SILICON (Back)
Special stylus
BEZEL
CUSHION
ITO FILM
ITO GLASS
KEY AREA
ACTIVE AREA
VIEWING AREA
DATE
SYMBOL
REVISED DESCRIPTIONS
NOTE
CUSTOMER APPROVED
APPROVED
CHECK
DRAWN
DWG NO
SCALE
UNIT
DATE
SHEET NO.
2009.06.24
1 / 1