MULTI-INNO TECHNOLOGY CO., LTD.

www.multi-inno.com

LCD MODULE SPECIFICATION

Model : MI0700DP

This module uses ROHS material

For Customer's Acceptance:

Customer	
Approved	
Comment	

The standard product specification may change without prior notice in order to improve performance or quality. Please contact Multi-Inno for updated specification and product status before design for the standard product or release of the order.	Revision	1.0
	Engineering	
	Date	2017-07-04
	Our Reference	

REVISION RECORD

REV NO.	REV DATE	CONTENTS	REVISED PAGE NO.
1.0	2017-07-04	First Release	

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Product warranty

Products manufactured to these specifications shall be capable of meeting all characteristics form RAECE'S delivery onwards or for a minimum period of 1 year of the customer received when stored and used as specified under normal conditions within the contents of these sheets. Suggest：The product should keep in the condition of 23±5℃,40～65％RH and away the sunlight directly.

Frame white mist shelf life

Storage conditions for the temperature of 23±5℃, humidity 40 ~ 65%, box shaped white mist warranty guarantee period for 3 months. (white fog can wipe frame, does not affect the function).

产品保质期

此规格触摸屏，从瑞视出货之日起或客户收到产品后，至少一年内应符合下列正常条件下的储存和使用规格。建议：产品应该保存在温度 23±5℃,湿度 40～65％，避免阳光直照的条件下储存。

框形白雾保质期

储存条件为温度 23±5℃,湿度 40～65％，框形白雾保质期保质期为 3 个月.（框形白雾可擦拭，不影响功能）。

Product environmental protection standard

Accord with standard of_____QM-03_____, and provide the following validation report environmental protection.

Touch screen products ROHS + HF test report	NO: CANEC1503770101
Touch screen products pahs + phthalate test report	NO: BZCHMPOA74806704-1
Touch screen products REACH test report	NO: BZCHMPOA74806704-2

产品环保标准

符合_____QM-03_____标准，并提供以下环保验证报告。

触摸屏产品 ROHS+HF 检测报告 NO:CANEC1503770101

触摸屏产品多环芳烃+邻苯二甲酸盐检测报告 NO:BZCHMPOA74806704-1

触摸屏产品 REACH 检测报告 NO:BZCHMPOA74806704-2

1 Sample Specification 样品规格

1.1 Product name Code No.: 4 wire Analogical Resistance touch panel

品名编号：4 线类比电阻式触摸屏

1.2 Scope 适用范围

The product is film/glass type transparent touch panels used as the input devices for general electric applianc es and OA equipment.

此产品是菲林/玻璃型透明触摸屏，常作为常用的电子器件和 OA 设备的输入装置。

1.3 Features and General Specifications 特征和规格

■ Features 特征

Construction 结构	Materials used 所用材料	Comment 注释
Top Circuit 上线	PET 薄膜	Anti-glare HardITOFilm; Thickness: 0.188mm 雾面导电薄膜;厚:0.188mm
Bottom Circuit 下线	Glass 玻璃	Thickness 厚度:1.1mm
Optical characteristicscs 光学特性	Transparency 透过率	>78%
	Haze 雾度	<10%

■ General Specifications 规格 (L=long 长;W=wide 宽; T= thickness 厚)

Item 项目	Specifications 规格	Unit 单位
Dimensional Outline 外形尺寸	104.00x165.00	mm
Viewing Area 可视区	94.94x154.90	mm
Active Area 驱动区	91.44x152.40	mm

1.4 Environment Conditions 环境参数

Items 项目	Value 值
Operating temperature & Humidity 工作温湿度范围	-20℃-+70℃:，<90%RH
Storage temperature & Humidity 储存温湿度范围	-30℃-+80℃:，<90%RH

1.5 Mechanical characteristics 机械性能

Items 项目	Value 值
Operation force 操作压力	120gMax
Hardness 表面硬度(JIS K5600)	>3H(3H 铅笔,45 度角,500g 力划过之后无刮花)
Capacitance 电容值	<5nF

1.6 Electric characteristics 电器性能

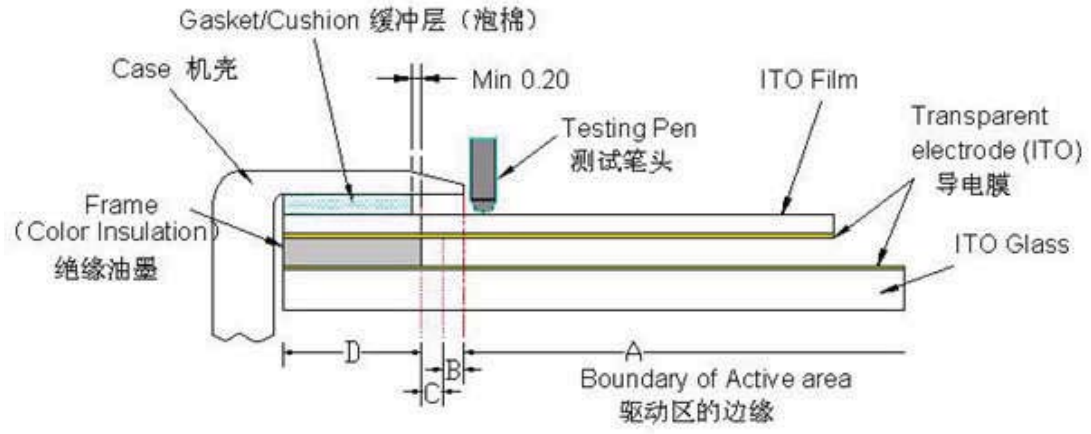
Items 项目	Value 值	
Max voltage 最大电压值	5V（DC）	
Max current 最大电流值	Top layer 上线路	35mA
	Bottom layer 下线路	35mA
Terminal resistance 回路电阻	X:350~1050Ω	Y:100~450Ω
Insulation resistance 绝缘阻抗	20MΩ or over (DC25V)	>20MΩ（直流 25V）
Linearity 线性(划线位置应是在 A/A 区至少内缩 2mm)	Less than1.5%	
Chattering Time 触点抖动时间	Less than 10ms	

1.7 structure 结构

- Shape and dimensions: As specified in individual drawings.

形状和尺寸：按图档说明

- Structure, and Area definition: The structure and the performance guaranteed areas of this touch panel are defined below.



构造和区域定义：T/P 结构与外观确保如下：

- Area-(A) : Active area
- 区域(A)： 驱动区

The area guarantees a touch panel operation with the following characteristics when pressed.

在按压 T/P 的驱动区时能够保证以下特性操作正常：

(ⅰ) Operation force 操作压力 (ⅱ) Electric characteristics 电器性能 (ⅲ) Tapping durability 敲击寿命 (ⅳ) Pen sliding durability 笔画寿命

- Area-(B) : Operation non-guaranteed area
- 区域(B)：非保证操作区

The area does not guarantee a touch panel operation and its function. When this area is pressed, touch panel shows degradation of its performance and durability such as a pen sliding durability becomes about one-tenth compared with the active area (Area- (A) as guaranteed area) and its operation force requires about double. About 0.5 mm outside from a boundary of the active area corresponds to this area.

此区域不保证 T/P 操作和功能正常。当按压此区域时，T/P 的外观和寿命将会下降。如：当对它做笔画测试时，笔画寿命大约为驱动区寿命的 1/10(如图中驱动区 A)，并且操作压力也要求是驱动区的两倍。此区域位置大约为驱动区外侧 0.5mm。

- Area-(C) : Pressing prohibition area
- 区域(C)：禁止按压区

The area forbids pressing because an excessive load is applied to a transparent electrode and a serious damage is given to a touch panel function by pressing. About 0.5mm outside from a boundary of Area-(B)" the operation non-guaranteed area" corresponds to this area.

此区域为禁止按压的原因是施加重压会造成透明电极破坏，并且 T/P 的功能严重损坏。此区域位置大约为区域(B)即“非保证操作区”外侧 0.5mm.

- Area-(D) : Non-Active area (Frame)
- 区域(D)：非驱动区

The area does not activate even if pressed.

此处按压不动作。

(Remark: In order to prevent unusual performance degradation and malfunction of a touch panel, please inspect firstly whether the set case designing and touch panel assembling method are reasonable or not, and then start to install and assemble after surely confirming the item "4.4 Cautions for installing and assembling".)

（备注：为了避免产品外观不良和产品出现故障，请预先检查实施的机壳的设计方案和 T/P 的上机组合方式是否合理，并且了解项目“4.4 组合上机的注意事项”后再上机。）

✧ Area-(B)+Area-(C)：Sensitive area

✧ 区域(B)+区域(C)：敏感区

Area–(B) and area-(C) both belong to the sensitive area. This area has a clearance between top and bottom contact side. Great press resulting in transparent electrode cracks, function defect to be exact, will deform surface transparent electrode. Please think about structure of sensitive area and case in order to avoid terminal user to fail to touch this area.

区域（B）、（C）为敏感区，由于该区域在产品上下导电面之间存在间隙，按压此处时 ITO 导电膜受压产生较大变形，引起 ITO 导电膜断裂，从而使触摸屏丧失功能。故使用触摸屏产品时,一定要充分考虑敏感区的尺寸及外壳的构造，必须避免最终的用户使用时触及到此区域。

Remark: Please add a layer of gasket/ cushion around it before assembling touch panel. Take care that gasket/ cushion’s location should be in the limits of Frame area’s location. Min. 0.2mm outside from an inner boundary of Frame area corresponds to this area:

① If designed case’ s size is bigger than active area’ s size, terminal user could touch sensitive area to damage touch panel;

②If designed case’ s size is smaller than active area’ s size, ITO transparent electrode will not damage when sliding test on the edge of case as sensitive area is covered by case around. But cushion/gasket’s thickness looks so important when case enters into active area: If too thick, the clearance of case and surface transparent electrode will be so big as to affect touch panel’s appearance. If too thin, the case will be pressed directly on the touch panel’s surface, which have to be damaged resulting in short circuit. Therefore, you’d better keep clearance of 0.2-0.3 mm between case and transparent electrode.

备注：组装触摸屏时，必须在产品表面四周加上一层缓冲层/泡棉，再装外壳。缓冲层/泡棉应落在绝缘油墨上，且最好在绝缘油墨上外扩至少 0.2mm:

1 若外壳设计比驱动区大时，最终用户有可能触及到敏感区而损伤产品；

2 若外壳设计为比驱动区小时，由于外壳四周完全遮盖了敏感区，因此当沿屏边缘划动时，不会造成 ITO 层的损伤，但是因为外壳伸进了动作区，因此防垫圈的厚度就显得很重要，太厚，外壳与膜表面之间的间隙太大，影响产品的外观，太薄，外壳直接压在膜表面上，会造成短路，最好外壳与膜表面之间保持在 0.2～0.3mm 之间。

2 Testing Condition 试验条件

2. 1 Scope 适用范围

The standard conditions are 23℃,65 %RH and 1013hPa, and measurement shall be done at normal temperature(5℃to35℃) and

humidity(45%RH to 85%RH) and normal atmospheric pressure(860hPa to1060hPa) .In the case of accuracy and reappearance necessity, measurement shall be done at 23℃±5℃,65 %RH±10 %RH and 860 h Pa to 1060hPa after exposing in these conditions for 24 h.

标准环境为：23℃,65%RH 和 1013hPa，应在常温条件（5℃-35℃），湿度为 45%-85%RH，和气压为 860hPa-1060hPa 下进行测试。倘若有必要对产品进行再测试，并且为使产品测试准确，可在 24 小时放置之后，在 23℃±5℃，65%RH±10%RH 和 860hPa-1060hPa 下进行测试。

(Remark: We only do the reliability test of life or environment for each T/P)

(备注：每片 T/P 只能进行一种寿命或环境等可靠性测试.)

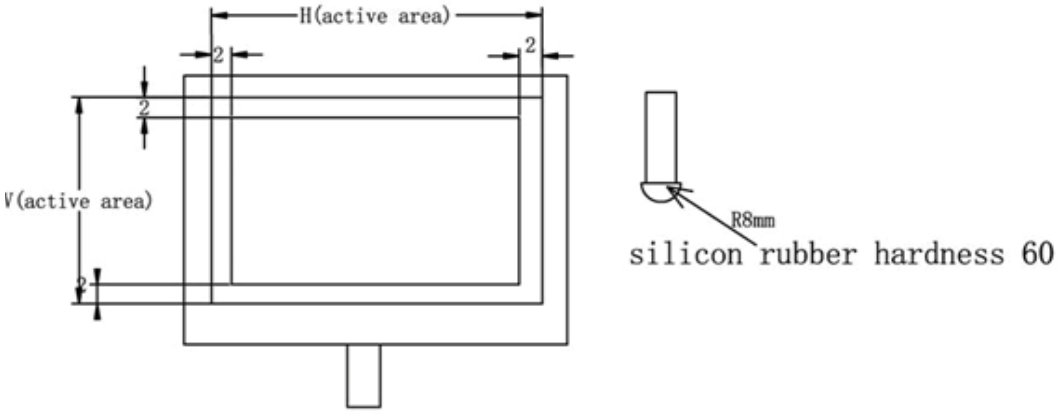
2.2 Mechanical characteristics 机械特性

2.2-1 Tapping durability 敲击寿命：

Using R8mm silicon rubber test on active area center, continue input until pass the criteria.

使用 R8mm 的硅橡胶敲击 AA 区的中心，满足下列测试标准。

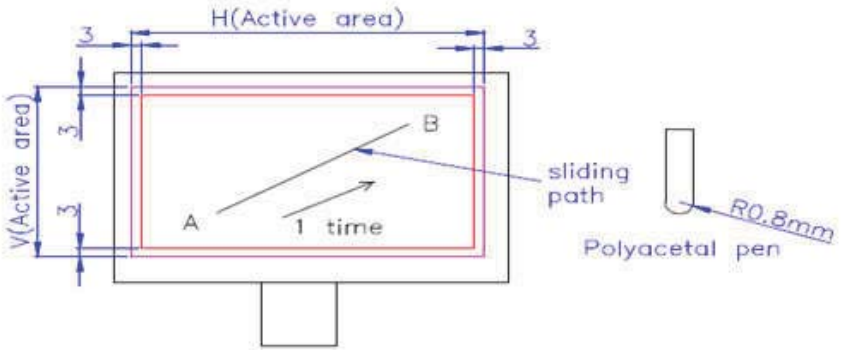
Condition 测试条件	Criteria 测试标准
Test position :any point in each side interval 2mm within active area。 Test jig:R8.0mm silicon rubber,hardness60° Test force:250gf Frequency:2times/sec 敲击位置：AA 区中心 敲击笔头：R8.0mm， 硬度为 60° 的硅橡胶 敲击力度：250g 频率：2 次/秒	No function fail after 1000K times. 100 万次后无功能不良。



2.2-2 Pen sliding durability 笔画寿命

1) Note life

condition	criteria
Test area : each side interval 3mm within active area **Test jig :R 0.8mm polyacetal pen** **Input force:150gf** **Freauencv:60mm/sec**	**No function fail after** **100K times** **1 time means sliding** **from A to B or B to A**



2.2-3 Operation force：120g Max(Tip R0.8mm Polyacetal pen operation and R8mm silicon rubber，interval 2mm within Active area)

操作压力: 120g Max（用 R0.8mm 的聚纤维酯笔与 R8mm 的硅橡胶操作，AA 区内缩 2mm）

(Remark: Depending on the pitch & the dimension of the spacer dots in between.)

（备注：由绝缘点的间距及大小来决定操作压力的大小.）

2.2-4 Impact stress：耐冲击试验

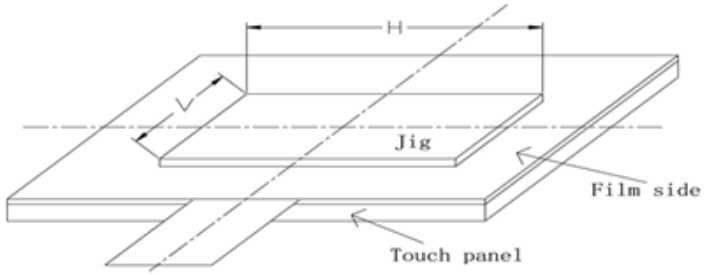
Using free-falling ball(stain steel) impact on touch panel active area center. The test method shown as figure.

Condition	Criteria
For 0.55tglass，use ϕ9.0mmstainless steel ball, drop height=30cm	**No function fail and no glass broken.**
For 0.7t glass，use ϕ9.0mm stainless steel ball, drop height=50cm	**No function fail and no glass broken.**
For 1.1t glass，use ϕ9.0mm stainless steel ball, drop height=70cm	**No function fail and no glass broken.**
For 0.7t tempered glass，use ϕ9.0mm stainless steel ball, drop height=70cm	**No function fail and no glass broken.**
For 1.1t tempered glass，use ϕ9.0mm stainless steel ball, drop height=90cm	**No function fail and no glass broken.**

2.2-5 Surface pressure 表面压力

The method is use a flate pressed on ITO film, plate area is defined by touch panel size. Shown as figure .

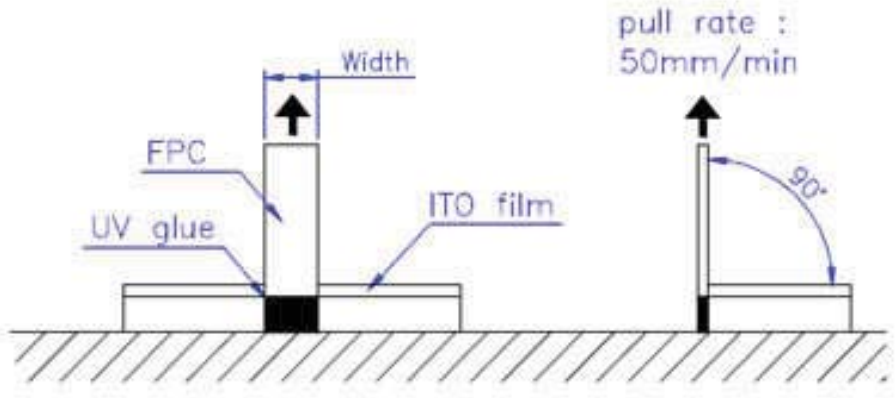
Condition	Criteria
Loading :500gf. **test time :30min,For jig** **size: H*V** **T .P. larger size than 9inch :10cm*7cm** **Between 5.5inch-9inch:7cm*5cm** **Smaller than 5.5inch:3cm*3cm**	**No inspenction issue* and function fail.**
***.inspection should be follow product TP inspect spec.**	



2.2-6 FPC Peeling force 引线拉力测试

To ensure the bonging strength between FPC and Touch panel pad, vendor should follow the standard method. Shown as below.

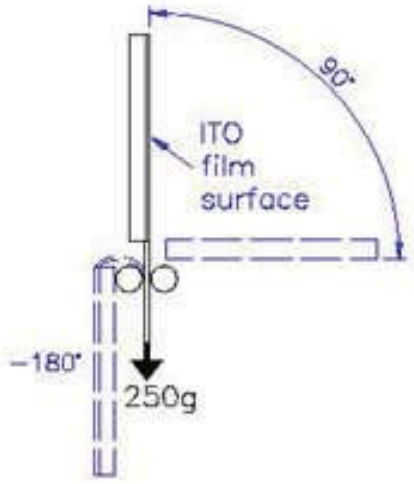
Condition	Criteria
Pull **rate:50mm/min** **FPC** **orientation:90℃**	**Peeling force should be higher than 0.5N/mm (500g/cm)** **Per unit length means FPC width，shown as figure,**



2.2-7FPC bending Force FPC 引线耐弯曲性测试：

T/P FPC should passed bending test. For end product use ,the FPC could be fixed on back bezel ,so pass the bending force test would become important.

Condition	Criteria
Curve radius; 2mm **Bending angle; 90°~-180°** **Pulling force; 250g** **For 3 cycles**	**No peeling and function fail.**



2.2-8 Vibration resistances:耐振动性测试

1) In operation: The requirements in “insulation resistance” of the item “ 1.6 Electric 2 Characteristics” shall be satisfied, when sweep vibration of 2 m/s ,10Hzto55Hz(1 min.) is given for 30 min. each in the directions of X, Y, Z.

2 操作时：当在 X，Y，Z 各方向以 2m/s 的加速度，10Hz-55Hz（1 分钟）频率振动，持续 30 分钟，满足“1.6 电器性能”里的“绝缘阻抗”项目要求。

2) Not in operation : The requirements in “Operation force” of the item “1.5 Mechanical characteristics “and “1.6 Electric characteristics” shall be satisfied after sweep vibration 2 of 20 m/s , 10 Hz to 55 Hz (1 min) is given for 30 min. each in the directions of X, Y, Z.

2 非操作时：当在 X，Y，Z 各方向以 20m/s 的加速度，10Hz-55Hz(1 分钟) 频率振动，持续 30 分钟，满足 “1.5 机械性能”里的“操作压力”和“1.6 电器性能”项目要求。

2.2-9 Reliant Condition test 可靠性条件测试

Test		Condition	Criteria(function)	Criteria(Appearance)
Operating temperature & Humidity 工作温湿度范围	high temperature	**70℃、120hrs**	**Normal performance*after Recovery time (≧24hrs)**	**No defect**after recovery time(≧24hrs)**
	low temperature	**-20℃、120hrs**	**Normal performance*after Recovery time (≧24hrs)**	**No defect**after recovery time(≧24hrs)**
Storage temperature & Humidity 储存温湿度范围	high temperature	**80℃、120hrs**	**Normal performance*after Recovery time (≧24hrs)**	**No defect**after recovery time(≧24hrs)**
	low temperature	**-30℃、120hrs**	**Normal performance*after Recovery time (≧24hrs)**	**No defect**after recovery time(≧24hrs)**
Thermal shock 冷热冲击		**-20℃(1hr) ~70℃(1hr) 50cycles**	**Normal performance*after Recovery time (≧24hrs)**	**No defect**after recovery time(≧24hrs)**
High temperature and high humidity 高温高湿		**60 ℃、90%RH、120hrs**	**Normal performance*after Recovery time (≧24hrs)**	**No defect**after recovery time(≧24hrs)**

***.Include linearity ±1.5%，**

****.inspection include Newton ring ,puffiness, waving, wet out etc.**

2.2-10 Package drop 包装跌落测试：

The goal of packing test is to make sure no defect occurred during carrying or storage in the ware house. All test cartons should be within full of T/P

包装测试的目的是为了确保搬运或在仓库储存过程中不发生破损现象,所有测试纸箱中应装满触摸屏.

A) Drop 跌落测试

Reference to ASTM D-775,ASTM D3332,ISTA 参照美国联邦包装标准

Condition 条件			Criteria 标准
Test condition 测试条件: One corner, three edges, Six flat by free-falling 一角,三边,六面自由落体	Packing weight(kg) 包装重量(kg) 0.45-9.52 9.52-18.59	Drop height(cm) 跌落高度（cm） 76.2 60.96	Pass product spec 满足产品规格

B) B)Vibration 震动测试

Test by random variation, follow standard IEC68-34 随意震动测试，参照国际电工标准

Condition 条件	Criteria 标准
Random vibration 随意震动： 0.015G /Hz from 5-200Hz -6db/Octavefrom 5-200Hz X,Y,Z each direction 1hr XYZ 每个方向一小时	Pass product spec 满足产品规格

C)Press test with packing 包装压力测试

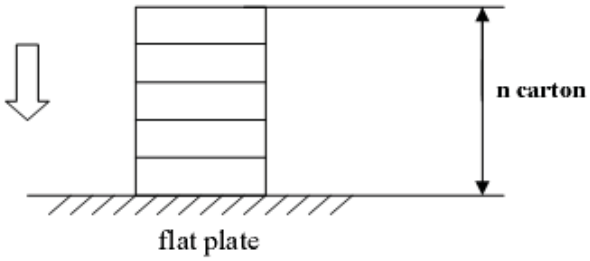
TO avoid Newton ring issue, this test can modify the actual storage in the warehouse

为了避免产生牛顿环，此次测试可以更改仓库中的实际存储。

Condition 条件	**Criteria 标准**
Several cartons pile up to set up the actual weight of storage. Then check the defectafter24hrs For the storage height, the maximum value would be shown onside surface of carton 将一些纸箱堆积起来设立实际存储重量，24 小时以后检验破损情况。存储高度取决于纸箱侧面的变形量	满足产品规格

Input loading reference to actual storage condition

输入载重参照实际存储条件



2.2-11 Flexible pattern heat resistance to soldering 引线焊接耐热测试:

Manual soldering temperature shall be less than temperature 320 ℃ for 3s. Only one soldering is allowed again. Soldering iron with 60 W Max(Tip diameter: φ1mmMax.). The requirements in “Operation force”、 “Light transparency” of the item “1.5 Mechanical characteristics” and “1.6 Electric characteristics” shall be satisfied.

手工焊接温度应小于 320 摄氏度，持续 3 秒。而重复焊接只能一次。烙铁应在小于 60W 的环境下（直径最大 1mm），满足“1.5 机械性能”里的“操作压力”、“透光率”和“1.6 电器性能”项目要求。

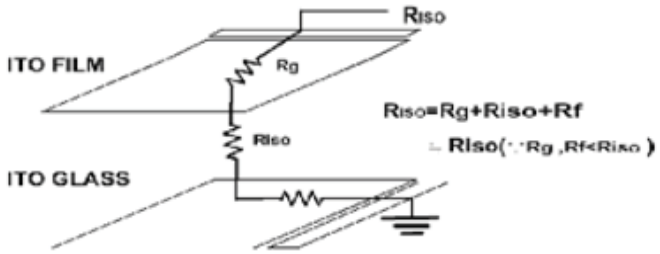
2.3 Electric characteristics 电器性能

2.3-1 Resistance 阻抗测试

Condition	**Criteria**
Measure X,Y direction resistance	Should be in spec. By case

2.3-2 Insulation resistance 绝缘阻抗测试

Condition	Criteria
Input : DC 25V	Pass ≧20MΩ criteria

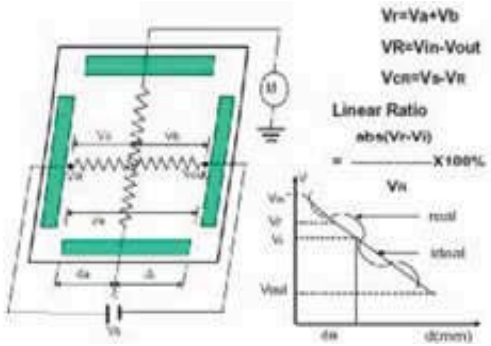


Rg: glass resistance / Rf: film resistance

2.3-3 Linearity （This is only according to analog type.）线性测试（只是针对类比式产品而言）

Linearity is the ratio of △V(difference between actual voltage and theoretical voltage)to **△VR(difference of input voltage)at any points.**

Condition	Criteria
Test area:each side interval 2mm within active area, **Test pitch:10mm** **Test force:150gf** **Test jig:R0.8mm polyacetal pen**	**Should be in spec.±1.5%**



2.3-4 Voltage Endurance 高压测试

To avoid over driving caused touch panel function fail, to do voltage endurance is needed.

Condition	Criteria
Input:DC25V Test time:≧60sec	No function fail

2.4 Appearance limit standard 外观检验标准

2.4-1 Scope 适用范围

This standard is only according to the view area (inside of frame). For the outside of view area, it would not be regarded as a defect that there is no possibility of causing influences to the performance for example: affixture, stain and so on which are able to be wiped away and washed on the surface of product. However, the item “Chip and Crack” applies to the whole part of the product.

这个标准只是针对可视区而言，因为可视区以外的区域对 T/P 的外观不会产生任何影响。如：T/P 表面有可擦拭的粘附物、污渍等等将不作外观不良处理。但产品项目“碎裂、破损”是针对整个产品而言。

<Inspection condition> <检测条件>

（A） 亮度（Environmental luminance）:1000~1200Lux

（B） 目视距离（Distance between human eyes and panel）:30cm(PANEL 需在透光情形下测定)（panel must be tested under light transparent）

（C） 目视角度（Visual angel）:45±45 度（待测物与水平夹角）

（D） 场所光源（Light source）:三波长灯管（3-waves fluorescent light source）

Judge criterion(判定基准)

(A)、在上述条件下，检验物品于 15 秒瞬间内可视者为主要缺点判定

Judgement under above mentioned criterion (panel must be tested under light transparent),testing goods defect can defect can be visible 15 seconds , which will be judged as major defects.

.(B)、保护膜及背胶离型纸上的异物、脏污、刮伤不计。

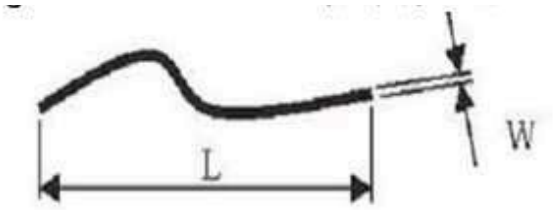
Objects/Dirt/Scratches on the protective film and protective film and the separator of rear DSA are disregard

2.4-2 Dot-like Foreign Matter 粒状杂物

（Remark: D=diameter 直径；L=length 长度；W=width 宽；GT=glass thickness 玻璃总厚）

CRITERIA		DECISION
D<0.1mm	直径<0.1mm	Acceptable 可接受
0.1mm<D<0.3mm	0.1mm<直径<0.3mm	Max.2EA，distance≥40mm 2 处，距离 40mm 以上可接受
D>0.3mm	直径>0.3mm	not acceptable 不可接受

2.4-3 Linear Foreign Matter& Scratch 线状杂物及刮痕



CRITERIA	DECISION
W<0.025mm 宽<0.025mm	Acceptable 可接受
0.025mm<W<0.05mm & L≤2mm 0.025mm<宽<0.05mm & 长≤2mm	Max.2EA，distance≥40mm 2 处，距离 40mm 以上可接受
W>0.05mm or L>2mm 宽>0.05mm 或 长>2mm	not acceptable 不可接受

2.4-4 ChipAnd Crack 玻璃断裂

Corner fragment:X<1.0mm and Y<1.0mm and Z<GT it is ignored

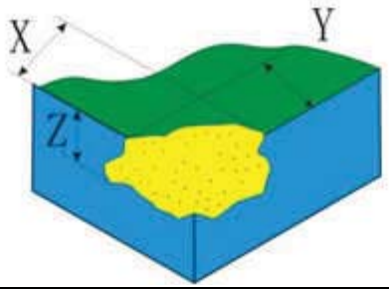
1) Corner fragment in the golden finger that seriously affects the product function is regarded as a defect.

2) Corner fragment in the circuit that seriously affects product function is regarded as a defect.

角断裂：X<1.0mm ，Y<1.0mm 和 Z<GT，可以忽略

1) 若角断裂位于金手指处，严重影响产品的功能，T/P 属不良品；

2) 若角断裂位于线路上，严重影响产品的功能，T/P 属不良品。



Side fragment:X<2.0mm and Y<1.0mm and Z<GT it is ignored

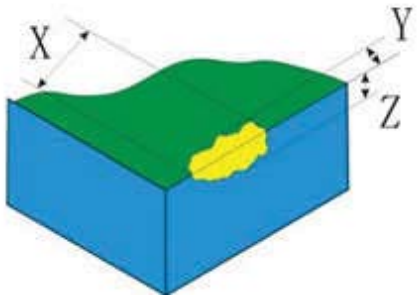
1) Side fragment in the golden finger that seriously affects the product function is regarded as a defect.

2) Sidefragment inthe circuit that seriously affects product functionis regarded as a defect.

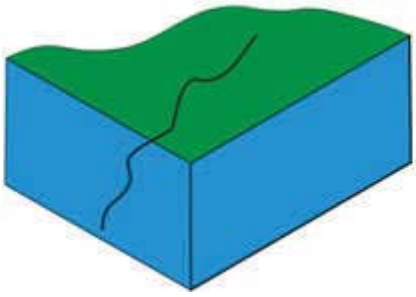
边断裂：X<2.0mm，Y<1.0mm 和 Z<GT ，可以忽略。

1) 若边断裂位于金手指处，严重影响产品的功能，T/P 属不良品；

2) 若边断裂位于线路上，严重影响产品的功能，T/P 属不良品。

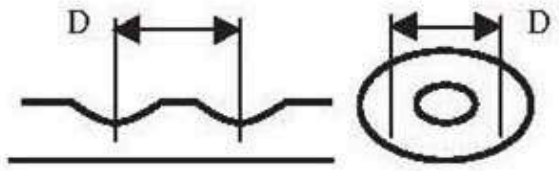


Progressive: T/P is regarded as defect.
裂纹：T/P 属不良品。



2.4-5 Fish eye on film, Dent on film and Air bubble

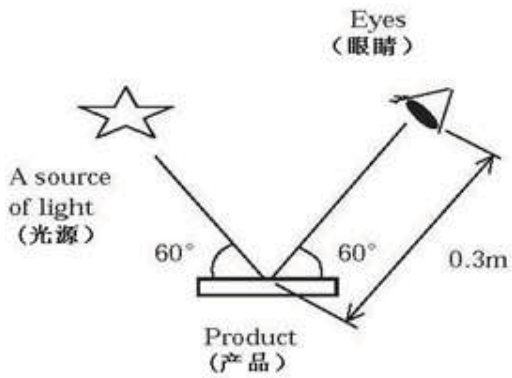
film 上的鱼眼



A:D≦0.1mm A: acceptable
B:0.1＜D≦0.3 mm distance≥40mm B: Max.2 EA，距离 40mm 以上可以接受
C:D＞0.3 mm C: not acceptable

2.4-6 Newton's ring:

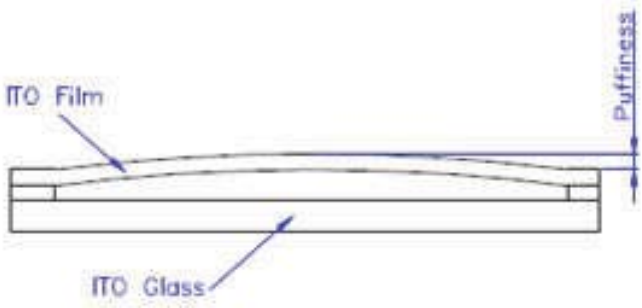
牛顿环:



1. Stripe Newton Rings 条纹牛顿环	a. The area of the Newton ring is more than 1/6 view area of the touch panel. It's NG. 牛顿环面积超过 1/6 TP 的 VA 区面积，不允许，	It's NG. 不允许
	b. The area of the Newton ring is less than 1/6 view area of the touch panel; and no character affected and line distorted after touch panel lightening. It's ok. 牛顿环面积小等于 1/6 TP 的 VA 区面积，且不影响产品的字体显示和线性，允许	It's ok. 允许
2. Liquid Newton Rings 水迹牛顿环	a. The area of the Newton ring is more than the 1/9 view area of touch panel without lightening. It's NG. 牛顿环面积超过 1/9 TP 的 VA 区面积，不允许	It's NG. 不允许
	b. The area of the Newton ring is less than the 1/9 view area of touch panel with lightening. And no character affected and line distorted. It's OK. 牛顿环面积小等于 1/9 TP 的 VA 区面积，且不影响产品的字体显示和线性扭曲，允许	It's OK. 允许

2.4-7 Puffiness value

Condition	Criteria
For 2inch ~5.5inch: 0.4mm MAX	**Pass the specification**
For 5.6inch ~9inch: 0.5mm MAX	**Pass the specification**
For 10inch ~17inch: 0.55mm MAX	**Pass the specification**



2.4-8 others: This specification is considered as basic on the products, but details are subject to discussion upon individual customer requirement.

其它： 此承认书基本满足产品特性要求，若有其它问题可针对客户实际要求进行协商。

2.5 Other request

2.5-1 Rim tape test

All lots of material of rim tape should be tested（by tape maker or touch panel vendor）by tape original specification，and test results should be reserved by touch panel vendor. Those reserved records should include both shear adhesion and peeling adhesion test. And the test methods should follow ASTM or JLS standards（depending on original setting of tape supplier）.

3 Precautions in use 使用过程中的注意事项

In order to prevent accidental use and performance deterioration, please keep the following precautions and inhibited points.

为了避免不良事故的发生和产品性能的破坏，请遵守如下警告及禁止事项。

3.1 Cautions for storage 储存的注意事项：

Store the products at the temperature and humidity mentioned in the specification in a state storage of package with care not to expose the products to the direct sunlight or stresses.

储存产品时须按样品承认书的温湿度要求放置，注意不可受日光直射或重物重压。

3.2 Cautions for unpacking 卸货的注意事项：

Please advert to direction of the product packing before unpacking

卸货前请注意产品外包装的方向性。

3.3 Cautions for handling 搬运的注意事项：

1) Transparency is an important factor for the product. So, please wear clean finger sacks, gloves and mask to protect the products from fingerprint or stain attach, and also hold the portion outside the view area when handling the panel.

须保持产品的透明清晰度，因而请在接触产品之前戴上清洁的指套、手套和面罩以免留下指纹或污点，

并且握拿产品时请握住产品的四周。

2) Please use finger sacks or gloves to avoid injuries by sharp edges when handling the Film-Glass type touch panel because a glass edges are not chamfered.

当握拿 Film-Glass 类型的产品时，请戴上指套或手套以免锐利部分刺伤手指，因为玻璃四周没有磨边。

【Inhibition】【禁止事项】：

- Do not handle the product by holding the flexible pattern portion in order to assure the reliability.

在取出产品时，请勿握拿引线以免造成产品与引线松动。

- Do not put one product on the other. Otherwise, it may cause the product to be scratched and/or change on cosmetic occur.

请勿将产品叠放，以免引起刮花造成产品外观不良。

- Do not put a heavy, hard or sharp object on the product.

请勿将重物、硬物、尖物压于产品上。

3.4 Cautions for installing and assembling 组合上机的注意事项

1) Do not give excessive strain to the product.

不要对产品施加额外的拉力。

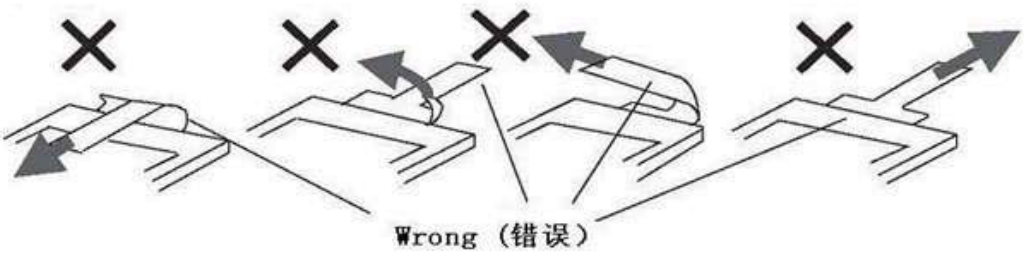
2) Flexible pattern cable is connected to the body by heat-seal (thermal pressure) method. So, do not apply excessive forces to the flexible pattern.

因为引线连接采用的是热压组合方式，所以不要使用额外的拉力。

【Inhibition】【禁止事項】

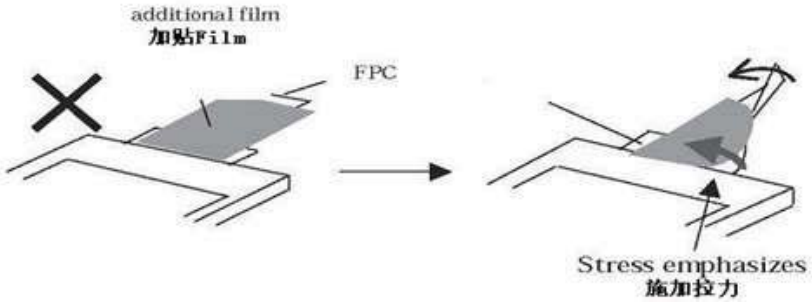
Do not add an excessive force to a FPC (Flex tail) that make speeling off of the FPC from the product as the manner shown in the following figures:

安装组合时，请勿重拉 FPC，因为重拉将使 FPC 易从产品上剥离，习惯拉扯方式如图：



Do not fix, adhere or mount any additional goods on the FPC such as additional film/plate on the FPC as shown in below, because such additional goods emphasizes a stress applied at the tip of FPC and it works tearing off the root of FPC from touch panel.

请勿在 FPC 上粘贴或安装其它物品。如：在 FPC 上贴一层 film 或金属板（如图），因为这些附加物会对 FPC 顶部施加一个额外的压力，从而导致 FPC 内侧松动。

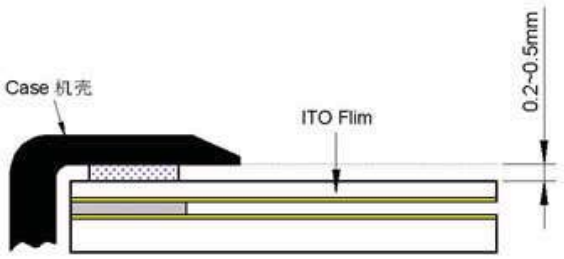


3) The transparent touch panel is provided with an air groove. Therefore please design the structure not to store any liquid or any fine particles near it.

T/P 若有通气槽，请在设计产品结构时,注意产品附近不能有液体物和粉状物。

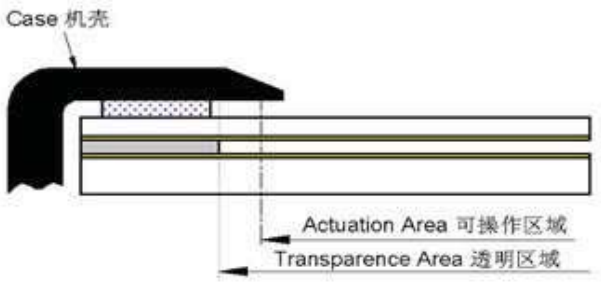
4) In order not to apply load on the surface of the touch panel, please keep a clearance of 0.2mm-0.5mm between touch panel and case.

为了避免 T/P 表面受压，因此机壳与我司 T/P 组合间隙须保持在 0.2mm-0.5mm 的范围内。



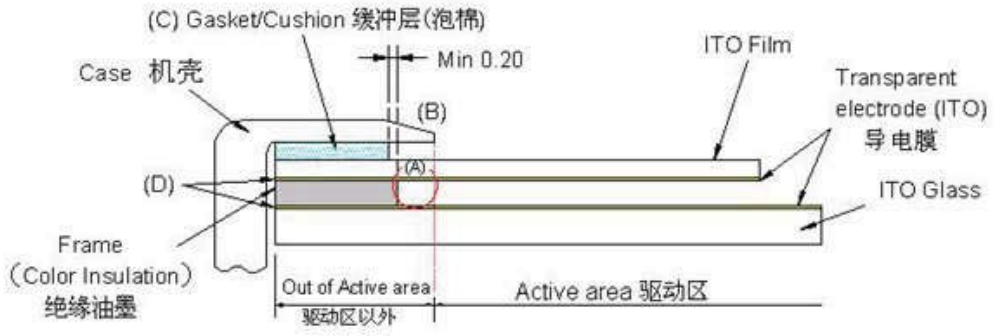
5) We recommend to design a case that it covers the boundary of the active area inside in order to prevent an operation at outside of the active area which can not guarantee the specified durability, because operation at the outside of the active area causes serious damage of a transparent electrode.

我们建议设计机壳应覆盖驱动区的边缘，以免对驱动区外区域进行操作，减少寿命，因为驱动区外区域操作会严重损伤透明电极。



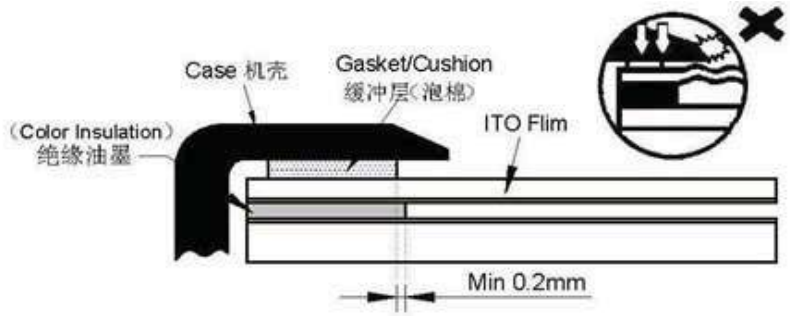
6) a. Pressing inside of boundary of the frame(part (A) as shown in below) may causes fault operation, so please design to avoid pressing of touch panel at part (A) such as having gasket/cushion at part (C). Particularly the area (B) shall be free from burr. The gasket/cushion material at the part (C) should not be exceeded to inside of the boundary of the frame.

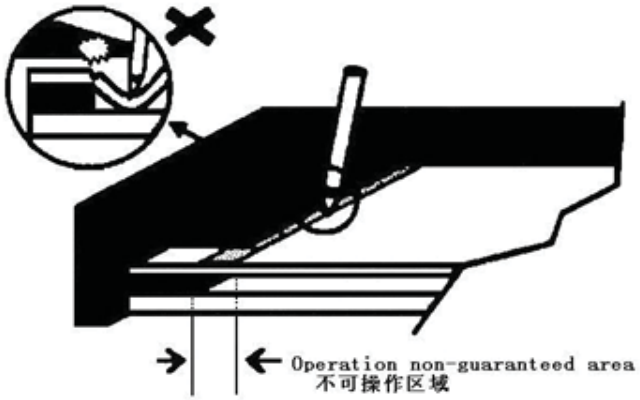
图中的 A 为敏感区，此区域易产生误操作，为了避免此类操作可在 T/P 的 A 部分设计一个缓冲层/泡棉如图 C。特别是图中 B 区域不能有震荡。缓冲层/泡棉应在图 C 的边缘上内缩，不可超过绝缘边。



Please do not make the following mistake:

请勿犯如下错误：





b. Since ITO of film and glass is not eliminated at the edge, therefore please design as any conductive material does not touch the edge of touch panel.

因为 film 和 glass 走线边缘仍有 ITO 导电膜，所以在设计时在它们边缘都不能有类似的导电材料，以免造成电极间相互影响，破坏电器性能。

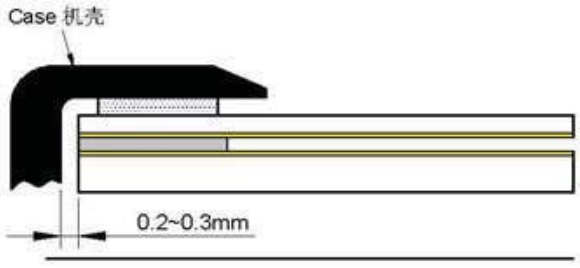
【Inhibition】【禁止事项】：

To prevent giving distortion to the film of the product and peeling off of the film from the product, do not fix the film and a set case or a shock absorbing material adhered to a set case by adhesion.

为了防止 film 变形及易从产品上撕落，请勿用粘胶将 film 与机壳或防震材料组合上机。

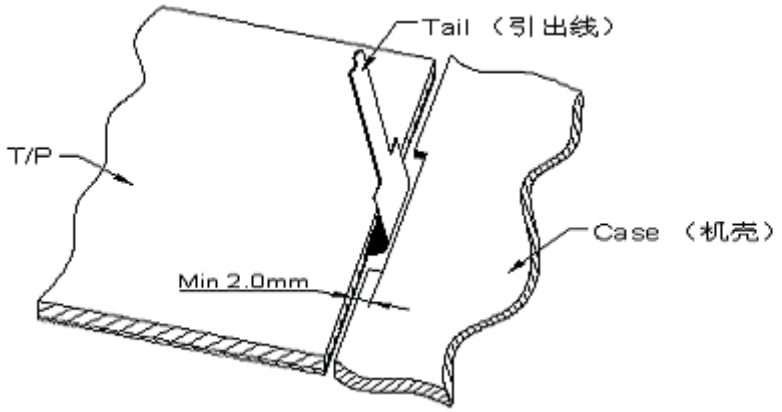
7) When designing installment of case and touch panel, you would better consider to keep clearance of 0.2-0.3mm between touch panel and inside boundary of case.

当设计机壳与 T/P 组装时，T/P 外形与机壳内缘距离最好控制在 0.2-0.3mm 以内.



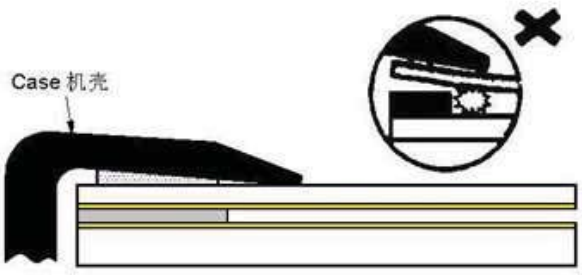
Meanwhile, in order to avoid touch panel any failure for extra wrap tail, please take care of keeping clearance of 2.0min.between tail position and inside boundary of case when the touch panel is built into case.

同时，当 T/P 组合上机时，为了避免过度弯折引出线造成产品功能不良，请慎重保持 T/P 引出线的位置与机壳内缘距离最小 2.0mm。



8) Please keep your case flat in order not to touch with T/P directly, which causes serious damage of a transparent electrode.

请保持机壳平整，以免机壳与 T/P 直接接触而导致透明电极损坏。



9) Wipe off the stain on the product by using soft cloth moistened with ethanol. Take care not to allow ethanol to soak into the

joint of upper Film and bottom glass. It may otherwise cause peeling or defective operation.

用浸湿过酒精的软布擦去产品表面的污秽，小心酒精渗入上线 film 和下线 glass 之间，否则附粘着力不强易产生剥离或操作不良。

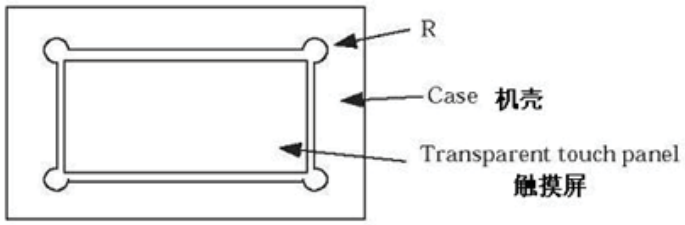
【Inhibition】【禁止事项】：

Do not use any organic solvent or detergent other than ethanol.

请勿使用酒精以外的任何有机溶剂或清洗剂。

10) The corners of the product are not chamfered. When positioning and fixing the product on the case. We suggest that you would provide an R part on the corner of the case so as not to apply load on the corner of the transparent touch panel.

产品的每个角落请勿倾斜。当产品定位组合上机时，我们建议贵方可以在设计机壳时，将机壳四角设计为“R”角形来固定产品，以致不会对产品的四角施加压力。



【Inhibition】【禁止事项】：

Do not press the film of the product when this product is built into a set.

当产品组合上机后，请勿按压。

11) Please confirm its characteristic in advance whether any damage is given to this product when attaching a protection sheet on this product at customer side. Some changes may arise in the characteristics of this product by the protection sheet attachment such as operation, cosmetic, etc.. However, those changes are out of our guarantee.

当需在产品上加贴客户方提供的保护膜时，请务必提前确定在产品上加贴保护膜是否会毁坏产品本身的特性。如果产品通过加贴保护膜，产品的特性可能会产生许多变化如：操作性能、外观等等，但是这些情况的出现我们不予保证。

Even when attaching a protection sheet with adhesion material by our side based on the request from customer, some changes may arise in the characteristics of this product by the protection sheet attachment such as operation, cosmetic, etc.. However, those changes are out of our guarantee.

甚至若按客户要求需加贴我司带胶的保护膜时，如果产品通过加贴保护膜时，产品的特性可能会有许多变化如：操作性能、外观等等，但是这些情况的出现我们将不予保证。

12) When this product is attached on LCD or other target by using a double-sided tape etc., put an enough pressure onto the non-active area (Frame) of a touch panel so that neither exfoliation nor gap may take place between a touch panel and LCD or other target. As attachment, please apply pressure equally onto the corner part and four sides of a touch panel. There is a case to take a time

being for conducting an original adhesion, therefore, please does not move the product after attachment.

当使用双面胶等将产品与 LCD 或其它机器组合时，请使用充分的力按压 T/P 的非动作区从而使 T/P 与 LCD 或其它机器粘合既无脱落又无空隙。当组合时，请平衡压合 T/P 角落和四周，由于 T/P 与机壳组合时起初粘合需一定的时间，所以当产品起初粘合好后，请勿接触产品。

4.5 Cautions for operation 操作时的注意事项

1) Operate it with a polyacetal pen (tipR0.8 or over) or a belly of a finger without applying operation excessive load.

请使用聚纤维酯笔（笔尖≥R0.8）或手指,而勿用太大的力进行操作

【Inhibition】【禁止事项】

Do not operate by other than polyacetal pen(tipφ1.6 or over) and/or a belly of a finger like a hard or a sharp edges such as a ball point pen, sharp pencil, sharp tiptoe, etc.

请勿用聚纤维酯笔 R0.8 的笔头（笔尖≥R0.8）或手指以外的物体来操作，如：硬而尖的物体像圆珠笔、尖铅笔、尖指甲等等。

2) The input position may be fluctuated a little through long-time use. It is desirable to provide a zero-adjustment function by using a circuit and software.

由于长期使用，点击按键的位置很可能会有略微的上下偏移，因此建议最好使用电流和软件的形式进行归零操作。

3) Use ethanol to remove stain from the product surface. If ethanol soaks into the joint of upper film and bottom glass, it may cause peeling and defective operation.

用酒精去除产品表面的污秽。如果有酒精泡沫移留在 film 和 glass 之间，很可能粘着力不强，引起脱落或操作不良。

【Inhibition】【禁止事项】

Do not use alkaline detergents including glass cleaner, manicure remover (toluene), benzine or other organic solvents.

请勿使用有机溶剂，包括：玻璃清洗剂，去除剂，汽油或其它有机溶剂。

4) Operation at the out of Active Area is out of our guarantee. Because failing operation will damage surface transparent electrode badly.

我司不保证驱动区外侧的操作原因是：此操作对导电膜会有严重的损坏。

【Inhibition】【禁止事项】

Do not operate at the out of Active Area.

请勿在驱动区外操作。

5) In case of cleaning the part of the case boundary of accomplished set, use a soft cloth or a cotton bud.

假若需清洗组装好后的机壳边缘部分，请使用棉布或棉棒进行擦拭。

【Inhibition】【禁止事项】：

Do not clean with a thing other than the finger such as hard or sharp edges like a finger nail etc. on the cloth, because it cause transparent conductive film cracks. Please advise this inhibition to your last customers.

请勿使用指肚以外的物体如用硬而尖的物体，如：套上棉布的尖指甲等，因为它会引起上线透明导电面 film 的损坏。请提醒您的终端客户注意。

4.6 Other cautions 其它注意事项

1) Please note that dew gathering in the panel due to abrupt temperature or humidity change, etc. May cause deterioration of performance.

由于环境温湿状态易发生变化，因此请保持产品勿结露，因为产品结露会引起产品的性能严重劣化。

2) (※In case of Film/Glass type)The glass of products may break due to a set’s drop or overload on the panels (It is difficult to avoid the break by nature.). Besides, the broken glass may cause injuries. Therefore, take care not to break the glass of products when handling the set, and add the following notes. When handling the product, take care not to break the transparent touch panel. In case the product is broken, do not touch the panel bare-handed to prevent injuries.

（※假若为 Film+Glass 类型）因为机器设备跌落或超压很可能会引起玻璃的破裂（一般很难避免破损），玻璃破损又可能会引起割伤，所以搬移机器设备时，请小心勿使 T/P 的玻璃破碎，同时增加以下注意事项。 当取出产品时，切记勿碎 T/P。 一旦产品破碎时，勿用空手直接接触产品以免割伤。

3) When this product was built into the set, if there is vulcanization material such as vulcanized rubber which has a possibility of generating the sulfuration gas near the set, since abnormalities will be caused to wiring of the product and it will become the cause of functional degradation, please give a constitutional cautions.

当产品组合上机时，若有硫性材料如硫化橡胶，这种材料在机壳附近可能会引起硫化反应，正因为这种异常现象的出现从而导致产品的线性紊乱，功能下降，请务必谨慎。

4) Caution for product safety set 产品安全配置注意事项：

Although full care is taken to ensure product quality, failure modes such as degradation, short circuits, or open circuits might be caused. Therefore, to design a product set, please study the affects of any single failure of the panel in advance and consider the safety of product configuration.

虽然我司很谨慎地保证产品的品质，但是还会有像功能下降、断路、短路现象出现的可能。因此，贵方在设计产品装置的同时，请预先要研究引起产品功能不良的因素，并且要考虑产品的配置安全性。

4 Handling of product specification for information 样品承认书反馈

1) This specification shall guarantee the quality of the panel alone. For actual use, be sure to check and evaluate the product set with the panel installed in your equipment.

此样品承认书只论证产品的品质保证。为实际上机使用，请检查和评估我司产品组合贵方机器设备的配置状况。

2) After evaluation, please put your approval stamp on our submitted specification and return us two copies of the specification. In case the copies are not returned to us even 3 months after the issued date described in the specification, we will regard that you have approved the contents of the specification.

当贵方评估后，请贵方在我司的承认书上盖上确认图章，并且将两份附本寄回我司，倘若在承认书制作日期后甚至 3 个月，副本未达至我司，我们将仍敬候贵方能确认我司的样品承认书。

Any change of the specification is subject to discussion prior to the actual changes.

样品承认书变更内容需针对实际情况进行协商变更。

5 Engineering drawing 工程图