



**WINSTAR Display Co.,Ltd.**  
**華凌光電股份有限公司**

## SPECIFICATION

**CUSTOMER :** \_\_\_\_\_

**MODULE NO.:** TSG320240B1241XXXX04

<p style="text-align: center;"><b>APPROVED BY:</b></p> <p>( FOR CUSTOMER USE ONLY )</p>	<p><b>PCB VERSION:</b> _____</p> <p><b>DATA:</b> _____</p>
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VERSION	DATE	REVISED PAGE NO.	SUMMARY
0	2014/09/12		First issue



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**RECORDS OF REVISION**

**DOC. FIRST ISSUE**

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# 1.General Specification

1.1. Structure: ITO Film+ ITO Glass+ FPC connector

1.2.Dimension:

T.P Outline Dimension:	104*140 ±0.2 mm
View Area	93.3*122.1±0.3 mm
Active area	90.3*119.2±0.3mm
FPC Length	61±0.7mm
Thickness of FPC terminal	A2549H-4P Housing
Total thickness	1.4±0.15mm(without Double side adhesive; Double side adhesive:3M467 T=0.1mm)

# 2.Electrical Characteristics

Electrical Grade : 5V(DC),1mA

Light Transmission : film with film model 78%

Insulation Impedance : Analog type—25V(DC) 、20MΩ↑

Top Circuit Resistance : 400±100Ω

Bottom Circuit Resistance : 400±100Ω

Top Circuit Loop Resistance : 200Ω~900Ω.

Bottom Circuit Loop resistance : 200Ω~900Ω.

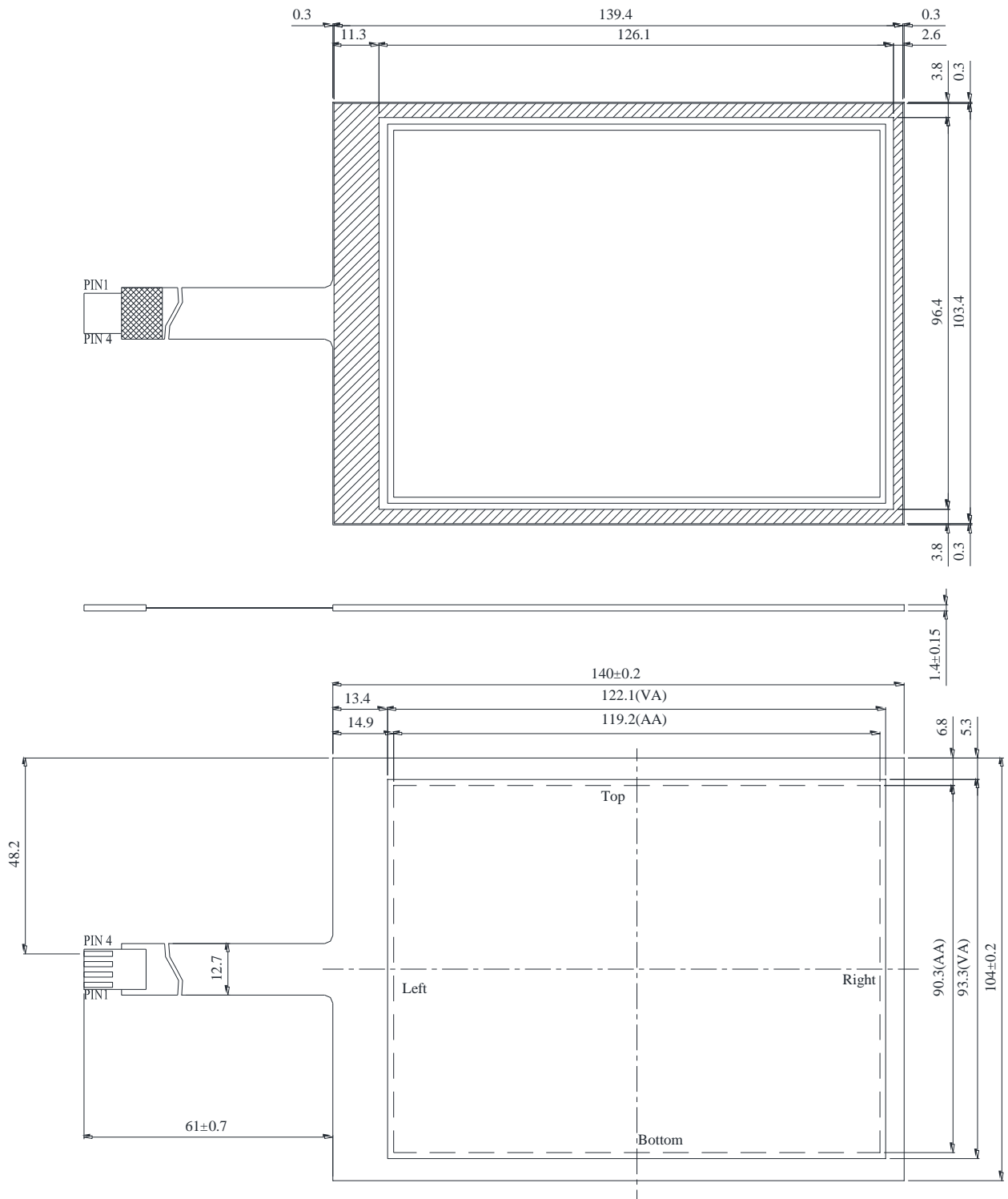
Chattering Time : ≤15ms

Linearity(for Resistive type only) : ≤1.5%

Pen Hitting Durability : ≥1000000 times ( with the R3.0 silicon rubber )

Pen sliding Durability : >100000 times

# 3. Contour Drawing



## 4. Other

### 4.1. Mechanical:

Actuation force: 60~150g

Puffiness:  $\pm 0.3\text{mm}$

Surface Hardness :  $>3\text{H}$

Heat Seal Strength:  $\text{FX} > 2 \text{ kg}$  ·  $\text{FY} > 500\text{g}$  ·  $\text{FZ} > 150\text{g}$ , after three directions pulling force testing the product function is ok. Testing method:

With manual pulls the Ergometer separately to carry on the testing for X.Y.Z three directions, and then the function testing.

### Environment Condition:

Operation temperature :  $-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$

Storage temperature :  $-30^{\circ}\text{C} \sim +80^{\circ}\text{C}$

High temperature :  $85^{\circ}\text{C}, 8\text{HR}$

Bill of material

Product Structure	Material	Material Number	Thickness
Top Circuit	ITO Film		0.188mm
Bottom Circuit	ITO Glass		1.10mm
FPC tail	FPC		
Protect ink			

### ITO face test standards:

The following standard is only adaptable to the visual area. As long as the TP has a good function, the appearance of the non-critical area could be ignored. W=Width L=length D=Diameter GT=Glass thickness ° The dirt which could be wiped up with ethyl alcohol are not concerned to the appearance standard. The anomalies are taken as lints if the length is three times than the width in some direction. And the extra space dots will be regarded as opaque spots, well the overwhelmed silver carbon ink is considered to the NG defeats.

Inspection condition: for all transparent soft touch switches, use white fluorescent lighting (above 40W) test them at a 45angle, and the inspection should be done at a distance of 20cm to 30cm between eyes and the products.

(Scratches)

Standard	conclusion
$W < 0.05\text{mm}, L \leq 5\text{mm}$	Can be ignored.
$0.05\text{mm} \leq W \leq 0.10\text{mm}, L \leq 5\text{mm}$	Those are ignored with more than 10mm separation
$0.05\text{mm} \leq W \leq 0.1\text{mm}, L \leq 5\text{mm}$	Scratch with another space $< 10\text{mm}$ , rejection
$L > 5\text{mm}$	Defective goods.
$W > 0.1\text{mm}$	Defective goods.

OPAQUE SPOT(including white spots and mixed spots)

Granular sundries

standard	conclusion
$D \leq 0.15\text{mm}$	Can be disregard.
$0.15\text{mm} < D \leq 0.25\text{mm}$	Up to 2 are allowed with more than 5mm separation
$0.25\text{mm} < D \leq 0.30\text{mm}$	Only 1 can be existed
$D > 0.30\text{mm}$	Defective goods.

Linear sundries (such as: white line or fibre)

The inspection standard and scratches the examination standard is the same.

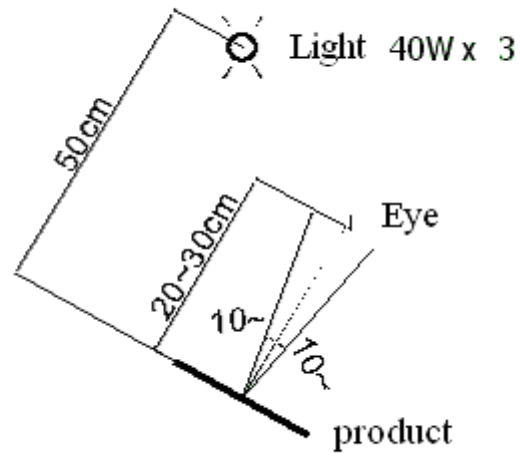
Test item	Method and tools	Test standards	Remark
Appearance	Visual, Caliper and Customer requirements	1) No damage , No mark. 2) Front surface color Graphics and underlying color Comouflage color do not have obvious color variation when compared to the sample, words and graphics clear and no words distortion; Process plate accurately allowable deviation<0.20mm.The bottom color camouflage is good 3) Assembly exactly. 4) Surface version silk India good, the typeface is clear, the color conforms to the requirement. 5) Adhesive and Spacer can not attach into VA.	
Size	Vernie calipers	Relative sizes are according to the drawing.	
Integrated objects	Visual	The same standard as the Opaque spots.	
Electronic performance	Multi-Meter/Voltage tester / OHM-Meter	1 ) Insulation resistance $\geq 20M\Omega$ 25 DV 。 2 ) No short and open circuit condition 3 ) Customer requirement.	
Linearity test	Tester	Linearity $\leq 1.5\%$	Analog
Pulling test after the heat seal strenght	Ergometer	Fx=2kg Fx-horizontal direction Fy=500g Fy-vertical direction Fz=150g Fz-Z axial direction	Only for the pressed tails

### Newton ring inspection standards:

Under the fluorescent lamp(40W, natural light), measuring by eyes from 20mm-30mm distance at  $90\pm 10$  angle .The inspection should be done at  $23\pm 5^{\circ}C$ (temperature),  $55\%RH\pm 10\%RH$ (humidity), 860hPa-1060hPa(the barometric pressure) environment, is suitable to the product in incipient-stage.



1	2	3
4	5	6
7	8	9



A. There are two kind of Newton Rings:

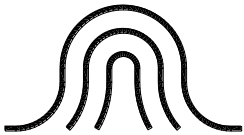
A) Regularity:



(a) When Newton ring dimension is more than 1/6 of tested product dimension, it is regarded unacceptable.

(b) When Newton ring dimension that is less than 1/6 of sample dimension and does not causes font and line distortion under fluorescent light, it is acceptable.

B) Irregular :



(a) If Newton ring dimension is more than 1/6 of tested product dimension without lighting, it is regarded unacceptable.

(b) If Newton ring causes font and line distortion under fluorescent light, it is regarded unacceptable.

(c) When Newton ring dimension is less than 1/5 of tested product dimension and the Newton ring does not cause font and line distortion under fluorescent light, it is acceptable.

Above A,B two types Newton ring all can not cause font and line distortion under, otherwise NG

**FAITH CONDITION:**

1. Thermostable humidity test: place the products at 60°C,90%RH to make a cycle testing, then put the products at normal temperature and humidity before the testing The products' electrical. Operate force and light trandmission should meet the requirements.

2. Thermal stability: Put the products at 70 °C for 24H ,then place them at nomal temperature and humidity for 24H before the testing . The products' electrical. Operate force and light trandmission should meet the requirements.

3. Resistance colding: Put the products at -20°C for 24H ,then place them at nomal temperature and humidity for 24H before the testing The products' electrical. Operate force and light trandmission should meet the requirements.

4. Colding thermal shocking: Put the products at -20°C (0.5H) to 70 °C (0.5H) to make 3 thermal cycles testing, hen place them at normal temperature and humidity for 24H before the testing . The products' electrical. Operate force and light trandmission should meet the requirements.

**Packing ways:**

The batch outgoing goods use in the paper box to inlay attracts models the plate way packing.

- 1、Inside packing use attracts models the plate packing.
- 2、Outside packing use the paper box packing.

**Notes**

To prevent accidental damage to the product, please follow the instructions below when handling the resistive touch screen.

- 1、Attention about the storage: . Store the product under the temperature and humidity range the sample, Direct sunlight exposure should be avoided.
- 2、Attention about the transportation : transparency is an important factor for the product. please wear clean gloves. finger-cover and face guard before contact the products to avoid leaving fingerprint or stain on the products ,when taking the products please hold the touch screen outside the viewable area .

**PROHIBITION ITEM**

- 1、Do not hold the tail when taking out the products to avoid creating the products.
- 2、In order to avoid scratches or damaging the products appearance Please do not flod the products.
- 3、Do not put heavy objects on the touch screen, do not stack or pile touch screens.

**ATTENTION ABOUT ASSEMBLY AND INSTALL TO THE MACHINE**

- 1、Do not apply any extra pulling force to the products.
- 2、As the tail connection uses the thermo-compression combination way, please do not apply any extra pulling force.
- 3、When assembling, please do not pulls the FPC again, because it may causes FPC easily to strip from the products.