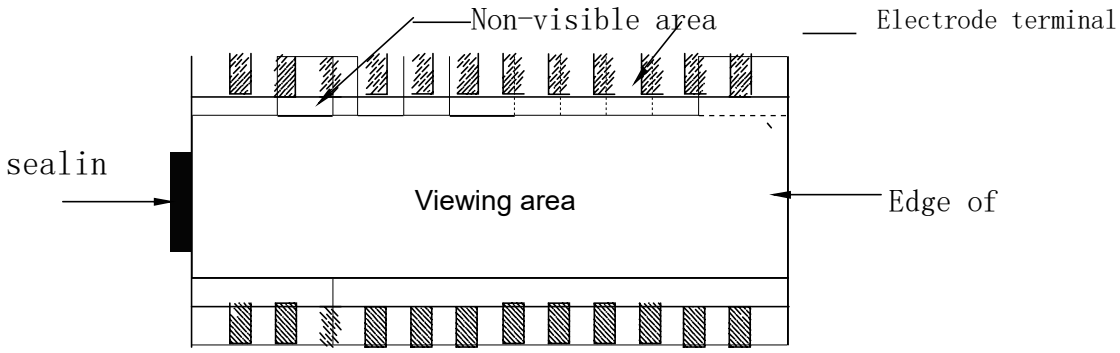
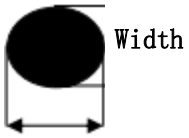
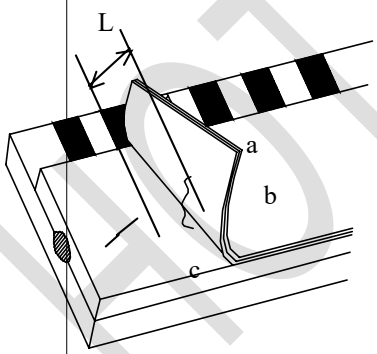
LCD defect detection Details Level A



1、Appearance inspection

<table>
<tr><th>Defective item</th><th>Legend</th><th colspan="3">Testing standards</th></tr>
<tr><td rowspan="6">Point defects
(1) Internal contamination
(2Impurities
(3) Light leakage points and other point defects (except for the intersection points of normal design)</td><td rowspan="6"> 

Φ = (L+W) /2</td><td>Φ（mm）(diameter)</td><td colspan="2">Judgment</td></tr>
<tr><td>Φ ≤ 0.1</td><td colspan="2">Not counted</td></tr>
<tr><td>0.1 < Φ ≤ 0.15</td><td colspan="2">Accept 2 items</td></tr>
<tr><td>0.15 < Φ ≤ 0.2</td><td colspan="2">Accept 1 item</td></tr>
<tr><td>Φ > 0.2</td><td colspan="2">NG</td></tr>
<tr><td colspan="3">1. When two appear, the distance must be more than 10.0mm.
2. Those outside the visible area are not counted.</td></tr>
<tr><td rowspan="6">Linear defects
1. Wool 2. Fiber
3. Glass scratches, etc.</td><td rowspan="6"> 
</td><td>Lenth(mm)</td><td>Width(mm)</td><td>judgement</td></tr>
<tr><td>Excluding</td><td>≤ 0.02</td><td>Excluding</td></tr>
<tr><td>≤ 4.0</td><td>≤ 0.04</td><td>2 pieces allowed</td></tr>
<tr><td>≤ 2.0</td><td>≤ 0.05</td><td>1 pieces allowed</td></tr>
<tr><td>-</td><td>> 0.05</td><td>NG</td></tr>
<tr><td colspan="3">1. Accept only when both length and width meet the requirements.
2. When the line is 3/4 of a circle, it is judged as a round object and judged as internal pollution.
3. When the length>5 or the width>0.04, it is inspected as internal pollution; when both appear at the same time, the distance must be greater than 10mm.
4. Outside the visual area is not counted</td></tr>
<tr><td>1.Polarizer impurities
2. Bubbles
3. Concave and convex spots 4. Puncture wounds
5.Water pattern</td><td>There is
1. Dirt between the polarizer and the glass.
2. Concave or convex caused by air</td><td colspan="3">1. The visible area is inspected according to the point defect standard, and the area outside the visible area is not counted. 2. The bubble caused by the object must be at least 0.2mm away from the visible area.
3. Water marks are not allowed.</td></tr>
</table>

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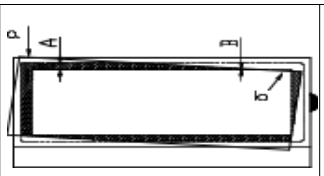
Polarizer is crooked		1. Polarizers are not allowed to extend beyond the edge of the glass. 2. The distance between the polarizer and the edge of the glass should not exceed 1.5mm and at least 0.2mm should not enter the visible area.
External silk screen bubble	-	The width of the bubble should not exceed 0.25mm, and there should be no obvious black shadow.
Powder (lump)	-	Inspect by point or line defects.

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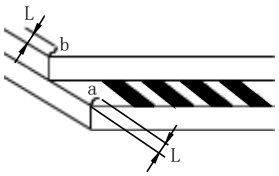
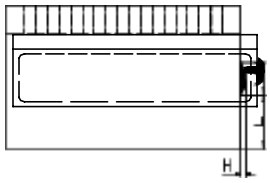
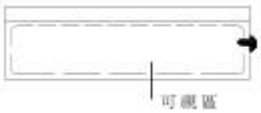
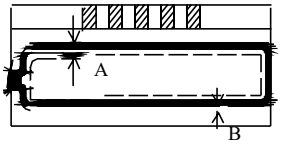
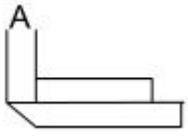
Defective item	Legend	Testing standards
Crack		Not allowed, the crack can be removed and tested for damage
Background	Some or all of the background color of the LCD product is different from the background color of the sample.	There must not be any obvious color difference between the base color of the product and the base color of the sample confirmed by the customer. Otherwise, the plate will be checked and packaged separately. (Confirmation by the customer is required if necessary)
rainbow	There is obvious color difference on the same piece of glass after patching	Not allowed, limit plate can be made for inspection. (Customer confirmation is required if necessary)
1. The sealing glue is too long 2. Too high 3. Off position		1. The height or length shall be subject to the dimension tolerance of the engineering drawing. 2. The deviation is not allowed.
Poor sealing glue penetration		The minimum penetration of the sealing glue is 1/3 of the distance from the glass edge to the retaining line, and the maximum penetration does not enter the visible area.
Sealing glue falls off	-	Not allowed
The crystal is not full	-	Not allowed
Uneven frame lines		1. ≥3/2 of the average frame width or ≤1/2 of the average frame width, rejected. 2. Rejected if entering the visible area.
Uneven edges		1.A ≤ 0.2mm, accepted 2.A > 0.2mm, rejected

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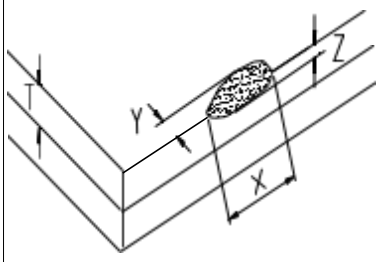
2. Damage inspection

Note: "X" indicates the damaged length and "D" indicates the PIN width	"Y" indicates the crack width "Z" indicates the crack thickness "T" indicates the thickness of a single piece of glass	
Defective item	Legend	Testing standards
General damage 1. Non-electrode area Glass surface 2. Surface bonding area Damage		1. X direction is not limited. 2. Y direction does not enter the visible area, it is acceptable. 3. Z does not cause ≤1/3 frame line leakage, it is acceptable. Note: X, Y, Z must be considered at the same time during inspection. If any one of them fails, it will be judged as NG.

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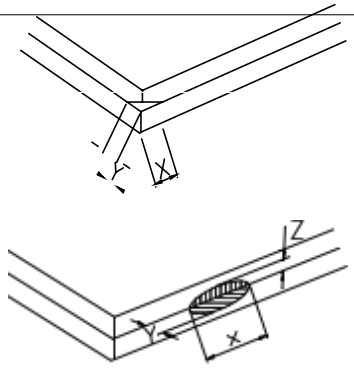
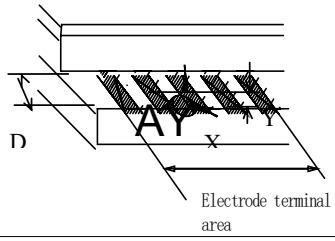
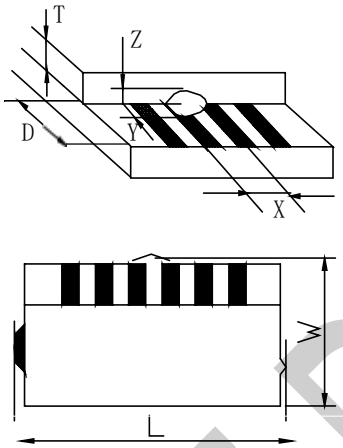
Adhesion		1. X direction is not limited. 2. If the Y and Z directions do not enter the frame line 1/3 or the silver point 1/3 is leaking, it is acceptable. Note: During the inspection, X, Y, and Z must be considered at the same time. If one of them fails, it will be judged as NG.
ITO surface electrode Terminal damage		1. X direction is not limited 2. Y direction ≤ 1/3D Note: X, Y, and Z must be considered simultaneously during inspection. If any one of them fails, it will be judged as NG.
Poor cutting		1. Non-pressed paper model: Y direction ≤ 1/3D, length not included 2. Pressed paper model, Y direction ≤ 1/4D 3. W and L are subject to the dimensional tolerance of the engineering drawing, and the deviation should be ≤ ± 0.2mm

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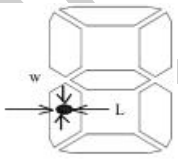
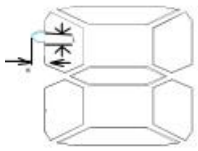
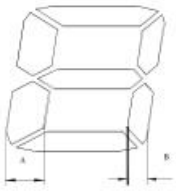
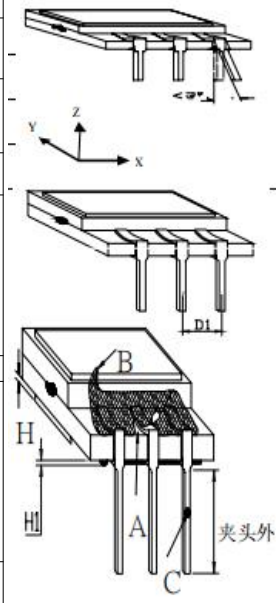
3. Telecommunications performance test

Defective item	Legend	Testing Standard
Break	After power on, the displayed segment is not displayed	Not allowed
High Current	After the normal voltage is applied, the current consumption of the product reaches or exceeds the set value.	1. Not allowed 2. If necessary, the current limit needs to be agreed with the customer
Short Circuit	-	Not allowed
Font Diffusion	During normal electrical testing, part or all of the pen segments become thicker.	Not allowed
1. White 2. Pinhole	 $\Phi = \frac{W + L}{2}$	Controlled as point defects with Φ less than 1/3 of the width of the segment. (Limited sample inspection can be performed if necessary).

1. Concave and convex points 2. Multiple strokes		Controlled as point defects and W is less than 1/2 of the width of the pen segment. If necessary, a limit sample test can be performed
Combination		1.(A-B) ≤ 0.2mm is acceptable. 2. B/A ≥ 3/4 is acceptable. Multiple scratches caused by combined deflection are inspected according to the point and line standard. If necessary, a limit plate can be used for inspection
Light and dark	The segments are unstable, bright or dark, or missing due to poor contact of the conductive points.	Not Allowed
Word Light	Partially or completely blurrier than the sample confirmed by the customer	Not allowed. If necessary, limit templates can be established for control.
Threshold voltage	-	1. ≤1/4Duty is controlled by ±0.04V according to the sample confirmed by the customer. 2. >1/4Duty is controlled by ±0.03V.

4. Installation pin inspection

Defective item	illustration)	Testing standards
Pins are crooked	The clamp and the electrode terminal are not on the same line (forming an angle ф)	1. ф>5° is not allowed 2. Does not meet the requirements of the engineering drawing is not allowed
PIN skew		The skew of the pin in the X or Y direction should not exceed 5°. There should be no distortion within 5mm of the pin end.
Chuck deviation		The chuck deflection must be ≤ the conductive wire width ±0.2mm.
Glue Bubbles		Not allowed to connect to PIN
Glue cut		Not allowed
There is glue outside the chuck		Not allowed (C in the figure)
Glue seeps into polarizer		Not allowed
Glue height		1. Exceeding the upper polarizer 1. Exceeding the upper polarizer
No glue around the chuck		Not allowed (A in the figure) Not allowed (A in the figure)
Glue shape		Wrap each chuck, fill the gap, make the surface smooth without dents, and do not allow any glue lumps on the back. Wrap each chuck, fill the gap, make the surface smooth without dents, and do not allow any glue lumps on the back.
Glue not cured	-	It is not allowed if the glue is not completely cured (if the glue does not stick to your fingers when pressed, it is OK, otherwise it is NG). It is not allowed if the glue is not completely cured (if the glue does not stick to your fingers when pressed, it is OK, otherwise it is NG).
The pins are not installed to the bottom	-	Not Allowed
Conductive adhesive offset	-	The PIN chuck should not be more than 0.2mm out of the way
PIN Bevel	-	Control according to engineering drawing requirements.
PIN Shape	-	After PIN cutting, there shall be no hooks, no obvious bending or deformation, and no obvious damage to the coating.

5. Product internal and external silk screen inspection

Defective items	Legend	Testing standards
Pattern color	-	Subject to the sample confirmed by the customer
Wrong ink	-	Not allowed
Position offset	-	Controlled by the requirements of the engineering drawing (screen printing film can be checked)
Pattern tilt	-	Controlled by the requirements of the engineering drawing (screen printing film can be checked)), the maximum tilt angle is ±1°.
Silk screen break	-	Inspected by the linear defect standard
Pattern missing	-	Not allowed (screen printing film can be checked)
Pattern blur	-	Inspected by the sample confirmed by the customer
1.Line hair 2.Wire drawing	-	Meet the requirements of the engineering drawing, visual line smooth, burr width or wire drawing length does not exceed 0.1mm
Pattern scratch	-	Inspected by the appearance linear defect standard
Line width	-	Controlled by the requirements of the engineering drawing (screen printing film can be checked).
1.Dirty spots 2.Bubbles on the pattern	-	
Uneven line thickness	-	Inspected by the point defect standard