



## **SPECIFICATIONS FOR LIQUID CRYSTAL DISPLAY**

<b>CUSTOMER</b>	<b>03.006</b>
<b>CUSTOMER MODEL</b>	
<b>MODEL</b>	<b>GVH27587A-HPP</b>
<b>DATE</b>	<b>2022.03.23</b>
<b>CUSTOMER APPROVED</b>	

**ZHEJIANG YONGTAILONG ELECTRONIC CO.,LTD**

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# SAMPLE APPROVAL SHEET

Rev : A

SAMPLE INFORMATION			
LCM MODEL	GVH27587A-HPP	NUMBER	
CUSTOMER MODEL		QUANTITY	30PCS
CUSTOMER NAME	03.006	VERSION	NO.2
DELIVER DATE	2021.08.13	LOT NO.	JSJ20210813-F
<input type="checkbox"/> NEW SAMPLE <input checked="" type="checkbox"/> REDO <input type="checkbox"/> IMPROVE			
SAMPLE FRAME			
LCM SIZE	-----	LCD SIZE	94.0*32.0*37.0*1.1mm
VIEWING AREA	91.0*29.0mm	ACTIVE AREA	
FPC	-----	PIN NUMBER	20+6
POLARIZER TYPE	<input type="checkbox"/> TN <input checked="" type="checkbox"/> HTN <input type="checkbox"/> FSTN <input type="checkbox"/> STN <input type="checkbox"/> B/M <input type="checkbox"/> TFT		
LCD CONNECT	<input type="checkbox"/> Zebra <input type="checkbox"/> Heat seal <input checked="" type="checkbox"/> PIN <input type="checkbox"/> FPC <input type="checkbox"/> TCP <input type="checkbox"/> Other		
VIEW DIRECTION	<input checked="" type="checkbox"/> 6:00 <input type="checkbox"/> 12:00 <input type="checkbox"/> 3:00 <input type="checkbox"/> 9:00 <input type="checkbox"/> Other:		
DISPLAY TYPE	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> FSTN <input type="checkbox"/> FFSTN <input checked="" type="checkbox"/> Reflect <input type="checkbox"/> Transmissive <input type="checkbox"/> Transflective <input type="checkbox"/> Glass		
DISPLAY MODE	<input type="checkbox"/> Yellow <input type="checkbox"/> Gray <input type="checkbox"/> Blue <input checked="" type="checkbox"/> Black/White <input type="checkbox"/> Other:		
DRIVE CONDITION	Duty=1/6     Bias=1/3     f=64Hz     VOP=3.3V		
OTHER			
MAKE	CHENDONGDONG	APPROVEL	Zhang Qiang

CUSTOMER FEEDBACK INFORMATION		
CUSTOMER APPRAISE	CUSTOMER'S REQUEST/IDEA	AUTOGRAPH
<input type="checkbox"/> OK		
<input type="checkbox"/> NG		

## HISTORY OF VERSION

[illegible]

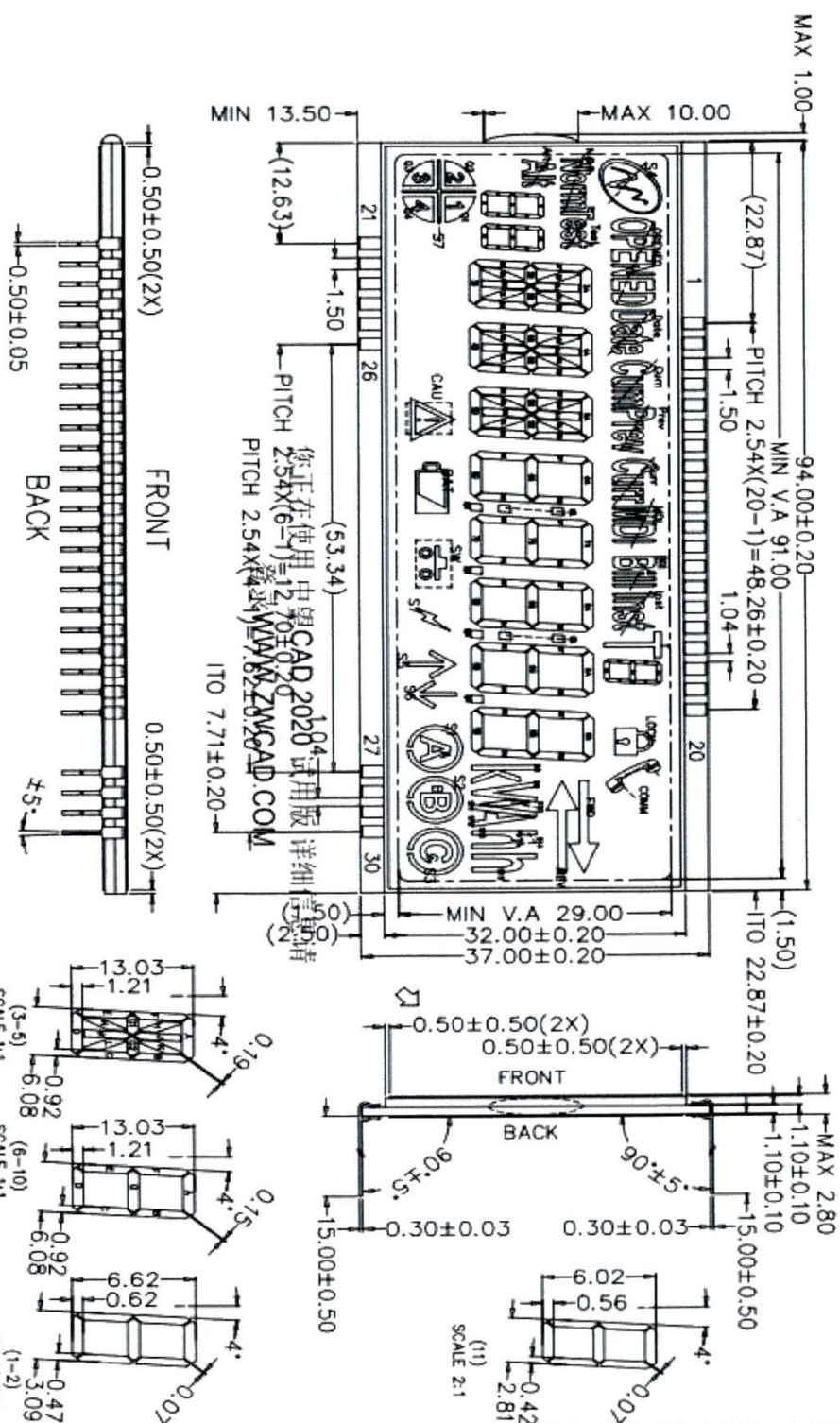
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## 1. Outline Drawing

确认此型号所有图纸 签字确认:



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
COAD0	COAD0	---	---	---	---	---	---	BAT	3C	4C	CAU	4C	5H	5D	6C	6C	6C	7C	51A	Q2	10	Q1	20	HE	8C	9C	9C	10C	10C	51A
COAD1	COAD1	---	---	---	---	---	---	---	3H	4H	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
COAD2	---	---	---	---	---	---	---	---	3H	3D	5D2	4D1	4D2	5H	5D2	6C	6D	7A	7C	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD3	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD4	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD5	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD6	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD7	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD8	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD9	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD10	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD11	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD12	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD13	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD14	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD15	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD16	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD17	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD18	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD19	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD20	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD21	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD22	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD23	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD24	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD25	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD26	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD27	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD28	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD29	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD30	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD31	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD32	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD33	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD34	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD35	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD36	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD37	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD38	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD39	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD40	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD41	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD42	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD43	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD44	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD45	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD46	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD47	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD48	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD49	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD50	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD51	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD52	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD53	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD54	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD55	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD56	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD57	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H	5C	6A	6B	7A	7B	8C	8C	10	1B	20	8A	8B	9A	8B	10A	10B
COAD58	---	---	---	---	---	---	---	---	3H	3H	4H	4H	5H	5H</																

**注：有双85要求，要求时间240小时**

DISPLAY TYPE	H1N	DRIVE METHOD	1/40UTY 1/384S			
VIEWING DIRECTION	6 O' CLOCK	OPERATING VOLTAGE	3.3V			
DISPLAY MODE	POSITIVE	OPERATING TEMP	-30°C~+55°C	B	THEC为H1N	2021.04.02
REAR POLARIZER	REFLECTIVE	STORAGE TEMP	-30°C~+55°C	A	NEW	2021.03.27
CONNECTOR	PIN	CUSTOMER NO.	REV.		修改内容	日期
		MODEL NO.	DRAWN BY: zdx		SCALE: 1:1	GENERAL TOL. ALL UNITS
		CWH27567A			10.20	mm
			CHECKED BY: HY		PAGE: 1/2	DATE: 2021.04.02
		-HPP				

## 2.ELECTRO-OPTICAL CHARACTERISTICS SPECIFICATION

### 2.1,Fundamental Specification:

NO	ITEM	DESCRIPTION
1	DISPLAY MODEL	HTN/REFLECTIVE/POSITIVE
2	DRIVING CONDITIONS	1/6Duty 1/3Bias VOP=3.3V

### 2.2,MAXIMUM RATINGS:

NO	ITEM	RATING	UNIT	CONDITIONS
1	Maximum AC Applied Voltage	10	V	Less than 1 hr
2	Maximum DC Applied Voltage	0.3	V	Less than 100hr
3	Tolerable DC Component	+/-0.25V	V	
4	Operating Temperature Range	-30 ~ +85	°C	
5	Storage Temperature Range	-30 ~ +85	°C	

### 2.3,ELECTRO-OPTICAL CHARACTERISTICS

NO	Item		Symbol	Temperature °C	Min	Typ	Max	Unit	Remark
1	Recommended Operating		V <sub>LCD</sub>	+25	----	3.3	----	V	Note:1 Note:2
2	Operating Voltage		V <sub>op</sub>	-40	----	----	3.5		Note:2 Point A, $\theta =10^0$
				+25	3.1	3.3	3.5		$\theta =10^0$
				+85	3.1	----	----		Note:2 Point B, $\theta =40^0$
3	Response Time	Rise	Tr	-40	----	2571	4799	ms	Note:4 V <sub>op</sub> =3.3V $\theta =10^0$ $\phi =0^0$
				+25	----	55	121		
				+85	----	35	46		
		Fall	Tf	-40	----	2895	5035		
				+25	----	68	101		
				+85	----	31	62		
4	Viewing Angle (Cr≥1.5 )		$\theta$ —6H	25	----	35	----	Deg	Note:1
			$\theta$ —12H	25	----	10	----		
			$\theta$ —3H	25	----	25	----		
			$\theta$ —9H	25	----	25	----		
5	Current Consumption		I <sub>LCD</sub> (MIX)	25	----	2.1	----	uA	Note:3
6	Capacitance		C	25	----	27.0	----	nF	Note:6
7	Contrast Ratio		Cr	25	1.0	3.0	----		Note:5 $\theta =10^0$ $\phi =0^0$

### 3.Specification of Quality Assurance

#### 3.1,Purpose

This standard for quality assurance should affirm the quality of LCD products to supply to purchaser by YTL.

#### 3.2,Standard for quality test

##### 2.1 inspection

Before delivering, the supplier should take the following tests, and affirm the quality of product.

##### 2.2 Electro-optical Characteristics:

According to the individual specification to test the product

##### 2.3 Test of Appearance Characteristics

According to the individual specification to test the product

##### 2.4 Test of reliability characteristics:

According to the definition of reliability on the specification for testing products

##### 2.5 Delivery Test:

Before delivering, the supplier should take the delivery test

2.5.1 Test method: According to ANS/ASQC Z1.4-1993.General inspection level II take a single time.

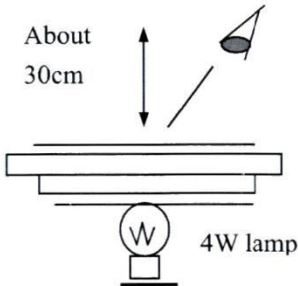
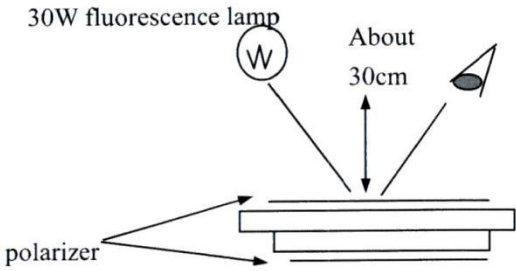
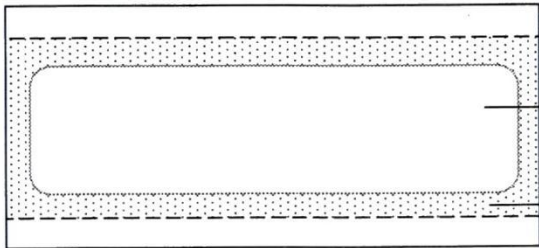
2.5.2 The defects classify AQL as following

Major defect: AQL=0.65

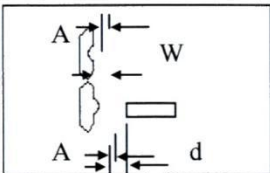
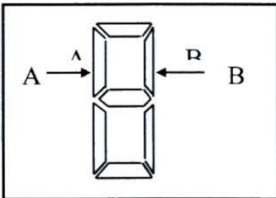
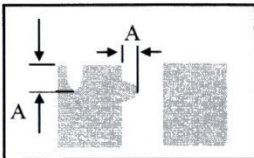
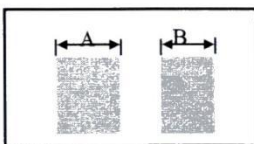
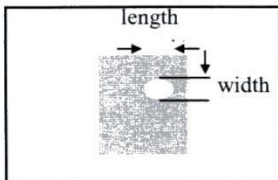
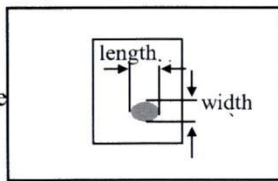
Minor defect: AQL=1.5

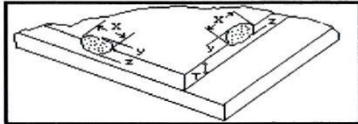
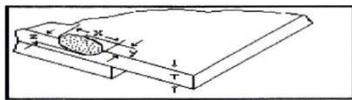
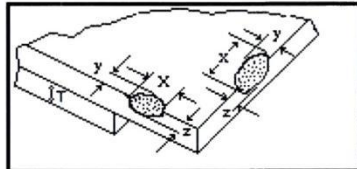
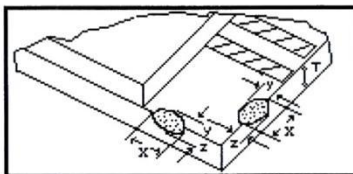
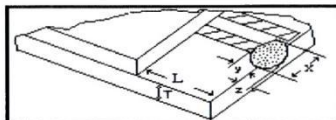
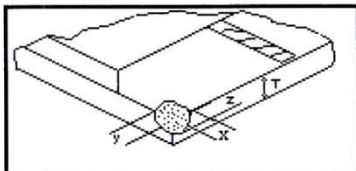
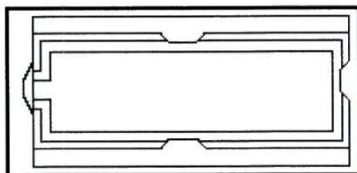


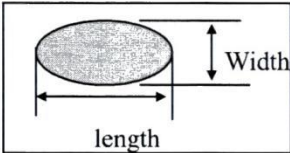
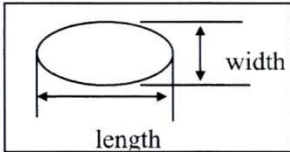
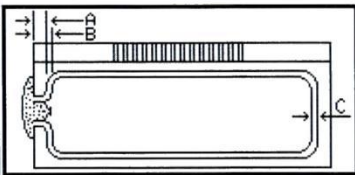
#### 4. LCD PRODUCTION INSPECT STANDARD

Item	Content
<b>1. Purpose</b>	In order to ensure YTL's production quality
<b>2. Apply range</b>	This inspect standard is adapted to production's size, appearance, electric capability etc. But, content that out of inspection standard isn't exclude
<b>3. Units</b>	One display piece or one batch production
<b>4. Inspect system</b>	<p>A/ Inspect in produce process and before shipment is included in Inspect system;</p> <p>B/ Inspect in produce process is a process that inspect appearance, electric capability when production is producing;</p> <p>C/ Inspect before shipment is a process that take out part production, After produce process inspect and before leave factory.</p> <p>D/ Standard that take out part production inspect is refer to ANSI/ASQC Z1.4 ( MIL-STD-105E);</p> <p>E/ AQL value: grave defect according to 0.65 , small defect according to 1.5</p>
<b>5. Inspect condition</b>	<p>A/ Inspect equipment: inspect apparatus and tool;</p> <p>B/ Inspect conditions: as follows illustrate.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p><b>illustrate one</b> <b>Transmissive type</b></p> </div> <div style="text-align: center;">  <p><b>illustrate two</b> <b>Reflective type</b></p> </div> </div> <div style="text-align: center; margin-top: 20px;">  <p><b>illustrate three</b></p> </div>



content	Inspect standard	Item(mm)	grade	judge ways	apply range								
All display	All segment must be display (stroke)		Severity	Eye observe	A								
Segment distortion	<div></div> <div></div> <p>concave protrude <math>A \leq 0.15</math> coarse <math>(A-B) \leq 0.15</math> RE: protrude point <math>\leq 0.15</math> and <math>\leq 1/2d</math> Concave point <math>\leq 0.15</math> and <math>\leq 1/3w</math> If width <math>\leq 0.3\text{mm}</math> then can't error (must precision)</p>		puniness	Eye observe magnifier	A								
Segment distort	<div></div> <div></div> <p>concave protrude <math>A \leq 0.15</math> coarse thin <math>(A-B) \leq 0.15</math> RE: border upon segment can't connect</p>		puniness	Eye observe magnifier	A								
Black & white dot pour	<div></div> <div></div> <p>Black and white dot pour</p> <table><tr><th>D</th><th>accept amount</th></tr><tr><td><math>D \leq 0.10</math></td><td>unlimited</td></tr><tr><td><math>0.10 &lt; D \leq 0.15</math></td><td>3</td></tr><tr><td><math>D &gt; 0.15</math></td><td>0</td></tr></table> <p>RE: only one black &amp; white dot in a segment, each lattice area must hold more than half area. It isn't accepted if five pour appear at one LCD</p> <p><math>D = (\text{length} + \text{width}) / 2</math></p>	D	accept amount	$D \leq 0.10$	unlimited	$0.10 < D \leq 0.15$	3	$D > 0.15$	0		puniness	Eye observe magnifier	A
D	accept amount												
$D \leq 0.10$	unlimited												
$0.10 < D \leq 0.15$	3												
$D > 0.15$	0												
No display	All design can't emerge		severity	Eye observe	A								
Part display	Design line can't emerge when part display		severity	Eye observe	A								
Display state	Display can't feebleness , excessive and short circuit		severity	Eye observe	A								
Display position	Design display position must be within tolerance of manufacture blue		severity	Eye observe	A								

content	Inspection standard (mm)			grade	Judge ways	Apply range												
Crack ing	A: General edge cracking		<table><tr><th>X</th><th>Y</th><th>Z</th></tr><tr><td>unlimited</td><td>≤0.3</td><td>≤1/2t</td></tr><tr><td>≤4.0</td><td>≤1.5</td><td>≤1/2t</td></tr><tr><td>≤3.0</td><td>≤1.0</td><td>≤t</td></tr></table>	X	Y	Z	unlimited	≤0.3	≤1/2t	≤4.0	≤1.5	≤1/2t	≤3.0	≤1.0	≤t	puniness	Eye magnifier	B
	X	Y	Z															
	unlimited	≤0.3	≤1/2t															
	≤4.0	≤1.5	≤1/2t															
	≤3.0	≤1.0	≤t															
	RE: T...odd glass thickness X...Length; Y...width Z...height; electrode width; All crack can't in the view range																	
B: terminal's double surface		<table><tr><th>X</th><th>Y</th><th>Z</th></tr><tr><td>unlimited</td><td>≤0.3</td><td>≤1/2t</td></tr><tr><td>≤4.0</td><td>≤2.0</td><td>≤1/2t</td></tr><tr><td>≤3.0</td><td>≤1.0</td><td>≤t</td></tr></table>	X	Y	Z	unlimited	≤0.3	≤1/2t	≤4.0	≤2.0	≤1/2t	≤3.0	≤1.0	≤t	puniness	Eye magnifier	B	
X	Y	Z																
unlimited	≤0.3	≤1/2t																
≤4.0	≤2.0	≤1/2t																
≤3.0	≤1.0	≤t																
	RE: Distande between crack part and Electrode must be large width of electrode. Otherwise ,reference C.																	
C: terminal cracking		<table><tr><th>X</th><th>Y</th><th>Z</th></tr><tr><td>unlimited</td><td>≤0.3</td><td>≤1/2t</td></tr><tr><td>≤2.0</td><td>≤0.8</td><td>≤1/2t</td></tr><tr><td>≤3.0</td><td>≤0.5</td><td>≤t</td></tr></table>	X	Y	Z	unlimited	≤0.3	≤1/2t	≤2.0	≤0.8	≤1/2t	≤3.0	≤0.5	≤t	puniness	Eye magnifier	B	
X	Y	Z																
unlimited	≤0.3	≤1/2t																
≤2.0	≤0.8	≤1/2t																
≤3.0	≤0.5	≤t																
E: Y value≤1/3L																		
D: Corner cracking		<table><tr><th>X</th><th>Y</th><th>Z</th></tr><tr><td>≤2.0</td><td>≤2.0</td><td>≤t</td></tr></table> <p>RE: It should reference C standard if distance between crack and electrode less than one electrode width.</p>	X	Y	Z	≤2.0	≤2.0	≤t	puniness	Eye magnifier	B							
X	Y	Z																
≤2.0	≤2.0	≤t																
E: Cracking the sealing part		RE: All sealing part narrow because Of crack should be classified as defect.	puniness	Eye magnifier	B													

content	Inspection standard	item (mm)	grade	judge ways	apply range															
Figure size	Accord with figure tolerance that manufacture blueprint regulate		Severity	Vernier caliper	B															
Crack	forbid		Puniness	Eye	A B															
Dark dot White dot Gas froth Feculence Scar	<div><div>D= ( length+width)/2</div><table><tr><th>D</th><th>Accept amount</th></tr><tr><td>D≤0.15</td><td>unlimited</td></tr><tr><td>0.15≤D≤0.20</td><td>3</td></tr><tr><td>D&gt;0.20</td><td>0</td></tr></table><div><p>RE: if two appear. distance must be Exceed 5mm</p></div></div>		D	Accept amount	D≤0.15	unlimited	0.15≤D≤0.20	3	D>0.20	0	Puniness	Eye magnifier	A							
D	Accept amount																			
D≤0.15	unlimited																			
0.15≤D≤0.20	3																			
D>0.20	0																			
Scar trace Dark line Dust	<table><tr><th>Length</th><th>Width</th><th>Acc quantity</th></tr><tr><td>unlimited</td><td>T≤0.02</td><td>Unlimited</td></tr><tr><td>≤1.0</td><td>T≤0.03</td><td>Unlimited</td></tr><tr><td>≤2.0</td><td>T≤0.05</td><td>3</td></tr><tr><td></td><td>T&gt;0.05</td><td>0 (Re)</td></tr></table> <p>RE: According to black and white dot if T more than 0.05. If two appear, distance must be exceed 5 mm.</p>		Length	Width	Acc quantity	unlimited	T≤0.02	Unlimited	≤1.0	T≤0.03	Unlimited	≤2.0	T≤0.05	3		T>0.05	0 (Re)	Puniness	Eye Magnifier	A
Length	Width	Acc quantity																		
unlimited	T≤0.02	Unlimited																		
≤1.0	T≤0.03	Unlimited																		
≤2.0	T≤0.05	3																		
	T>0.05	0 (Re)																		
Sealing	<div></div> <p>B: sealing mouth length. C: sealing circle frame width</p> <p>1. The minimum injection amount of sealant should be <math>a&gt;1/3b</math>, but, can't in view bound. 2. Size of the solidified seal subjects to actual drawing. 3.Sealing circle frame distortion, it would be classified as defect if fact size less than <math>1/3c</math>.</p>		Puniness	Eye Magnifier	B															
Polarizer	Adhibit position should be in the figure tolerance that manufacture blueprint regulate		Puniness	Eye	A B															
Color splash	No especially color splash (rainbow)		Puniness	eye	A															



content	Standard	item (mm)	grade	judge way	apply range
Screen print	Non-allow wrong screen print ( screen tool is wrong ) or design is reverse		Severity	Blueprint Sample	A
	Screening side shouldn't be used mistake			Blueprint Sample	
	Printing ink shouldn't be used mistake		Severity	Blueprint Sample	
	Color must be accord with sample's desire		Puniness	Hue sample	
	Printing ink is short, screen faintness and design uncomplete all isn't accept		Puniness	eye	
	Screen print design slopeing angle degree, distance size between design edge and LCD edge should accord with blueprint		Puniness	Magnifier	
				Vernier Caliper	
	Dark and white dot on the screen print surface, reference LCD standards		Puniness	Magnifier	
	Word width that screen print on the LCD surface, reference segment distortion standard.			Magnifier	
	After screen printing ,design can't be dirt and damaged		Puniness	eye	

**REMARK:**

**1: Purchaser quality inspection:**

Purchaser should inspect production at once if it have been delivered, and announce inspection result to supplier within 30 days. Otherwise , it means that production have been accepted, and it is eligibility.

**2: Feedback treatment**

- 2.1 When purchaser inspected production and judged production defect be attributed to supplier , please untread production to supplier . but , both supplier and customer should analysis the reasons and discuss treatment ways when the defect and liability reason is not sure.
- 2.2 When customer untread defect production to supplier ,defect phenomena should be point out clearly.



## 5. Standard Specifications for Reliability

### 5.1 Standard specifications for reliability

ITEM		CONDITION				TEST TIME
1	High Temperature Storage	+85°C				48H
2	Low Temperature Storage	-30°C				48H
3	High temperature operation	+85°C				48H
4	low temperature operation	-30°C				48H
5	High temperature and humidity	+85°C , 85%RH				240H
6.	Temperature CYcling Test	-30°C	+25°C	+85°C	+25°C	10 CYCLES
		30min	20min	30min	20min	

[Criteria] There should not exist conspicuous failure of LCDS functions and appearance after the Tests.

### 5.2 Test Conditions and Inspection Criteria

In order to do the final testing sample must be in room temperature for 24 hours. Besides item 1,3,4 should be under curing 70°C for 30 minutes ,then test three items by follows.

NO	Item	Test model	Inspection Criterion
1	Current Consumption	Refer to Specification	The current must be under two times of initiated test.
2	Contrast Ratio	Refer to Specification	The contrast ratio must be larger than half of initiated test.
3	Appearance	Visual Inspection	Defect free.

### 5.3 Life Time

Functions,performance,appearance,etc.shall be free from remarkable deterioration after 135000 hours under normal operating and storage conditions,room temperature( $25^{\circ}\text{C} \pm 10^{\circ}\text{C}$ ),normal humidity( $45 \pm 20\%\text{RH}$ ),and in area not exposed to direct sun light.

## 6. APPLICATION NOTES

### 6.1 Safety Instruction:

The liquid in the LCD should not be swallowed or touched .If it accidentally gets on your hands, wash them with water.

### 6.2. Handling instructions:

The LCD panel is a glass product developed through precision processing and special orientation treatment. If pressure is applied to the panel, therefore, orientation may be disturbed, making it difficult to return to its original condition. It is apt to crack or be broken easily if is dropped or hit to a hard object, particularly around the edges. Attention must be paid to avoid external shock.

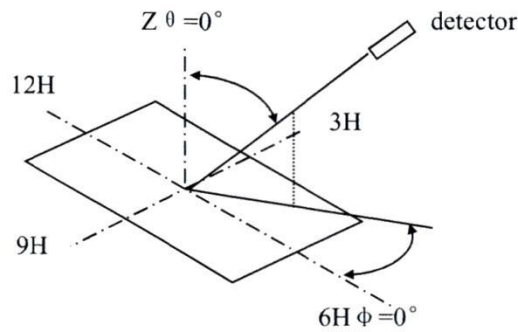
### 6.3. Mounting Instructions:

- a. When connection a LCD panel to circuit board, it is recommended to use a rubber connector or flexible connector. Direct soldering or mechanical connection is not possible .The pin connected type LCD permits soldering of pins.
- b. When mounting a LCD panel on a cabinet, care must be taken not to apply excessive force on the panel with a fingertip. Etc. Otherwise, it may cause an operating failure or will shorten the lifetime of the panel.
- d. DC voltage or driving voltage higher than the specified voltage will reduce the lifetime of the liquid crystal display panel.
- e. The polarizer should be handled with carefully, because it is soft and apt to suffer damage .If a protective panel is attached to the polarizer to avoid damage and contamination, it should be removed just before use as much as possible.
- f. Use a dry, soft cloth to clean the polarizer, if contamination persists, wipe it off with a small amount of petroleum benzine. Avoid using an organic solvent as much as possible.
- g. When attaching with the heat seal or anisotropically conductive film, wipe off with alcohol before use.
- h. LCD is a sensitive component by electrical driving; the electrode couldn't be inconsecutive, otherwise it will cause nstable display.

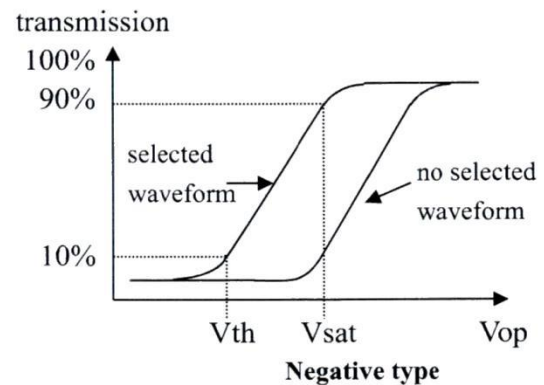
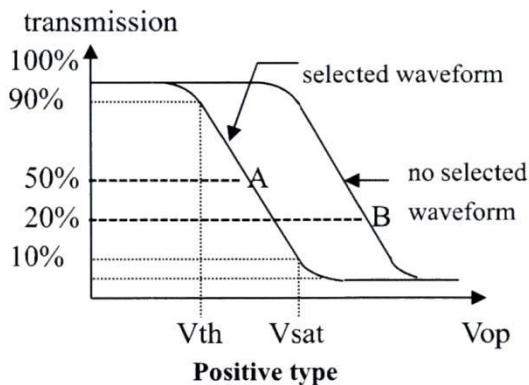
### 6.4. Storage Instructions:

- a. Avoid storage in high temperature and high humidity. When long-term storage is required, keep the panels at a temperature of 15°C to 35°C and at a relative humidity of 65% or less.
- b. The LCD unit should be stored in a dark place, do not expose it to direct sunlight or fluorescent Lamp
- c. Note that the presence of water-drops or dew in the LCD panel may deteriorate the polarizer or corrode the electrode.

## 7.NOTE.1 DEFINITION OF VIEWING ANGLE AND DIRECTION



## NOTE.2 THRESHOLD VOLTAGE AND SATURATION VOLTAGE



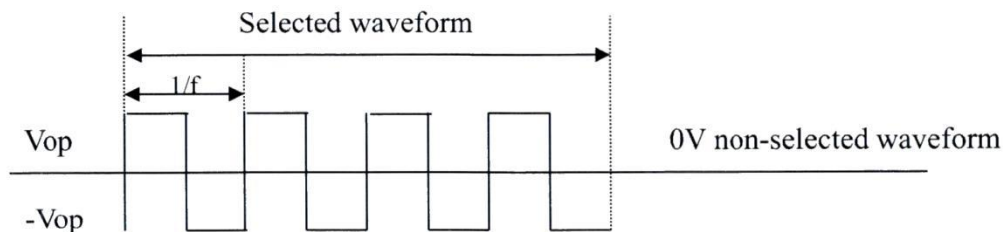
**Vth:** The voltage  $V_{op}$  that the transmission rate of segment is 90% (positive) or 10%(negative) of saturated value on conditions of the selected waveform. (no-selected waveform is opposition)

**Vsat:** The voltage  $V_{op}$  that the transmission rate of segment is 10% (positive) or 10%(negative) of saturated value on conditions of the selected waveform. (no-selected waveform is opposition)

Conditions:

- ( 1 ) Temperature: See individual specification.
- ( 2 ) Measuring Angle (  $\theta$  ) : See individual specification.
- ( 3 ) Driving Frequency : Typical value in individual specification.

## NOTE.3 CURRENT CONSUMPTION (I LCD)

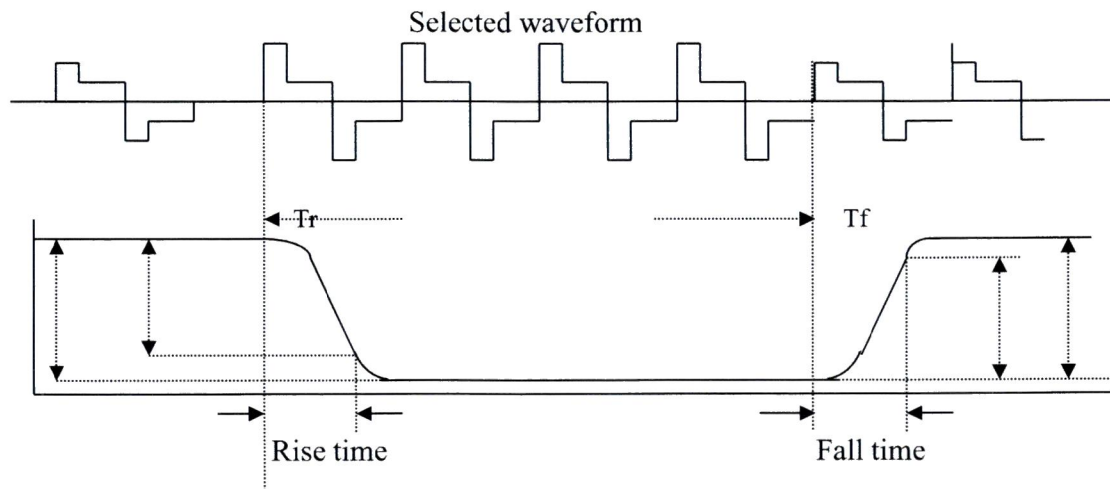


- Conditions:
- (1) Temperature: 25°C.
  - (2) Driving waveform : static waveform
  - (3) Voltage applied to all segments.

#### NOTE.4 RESPONSE TIME ( Tr, Tf )

No selected waveform

No selected waveform



#### NOTE.5 CONTRAST RATIO ( C.R )

##### 5.1 POSITIVE TYPE:

$$\text{CONTRAST RATIO} = \frac{\text{BRIGHTNESS AT VOP (NON-SELECTED)}}{\text{BRIGHTNESS AT VO (SELECTED)}}$$

##### 5.2 NEGATIVE TYPE:

$$\text{CONTRAST RATIO} = \frac{\text{BRIGHTNESS AT VOP (SELECTED)}}{\text{BRIGHTNESS AT VOP (NON-SELECTED)}}$$

#### NOTE.6 CAPACTANCE ( C )

Measuring Method Of Capacitance



Conditions:

- (1) Temperature: 25°C.
- (2) Driving waveform: 64Hz, sine wave, 3.3V.
- (3) Voltage applied to all segments.



## **8.FACTORY**

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