



# SPECIFICATION

## PV05701YP40B

- Preliminary Specification
- Final Specification

### CUSTOMER:

**Made By:** Du xiaogang

**Checked By:**

**Approved By:**

**Quality:**

**Date:**

**Note:**

**Approved By:**

**Date:**

**Note:**





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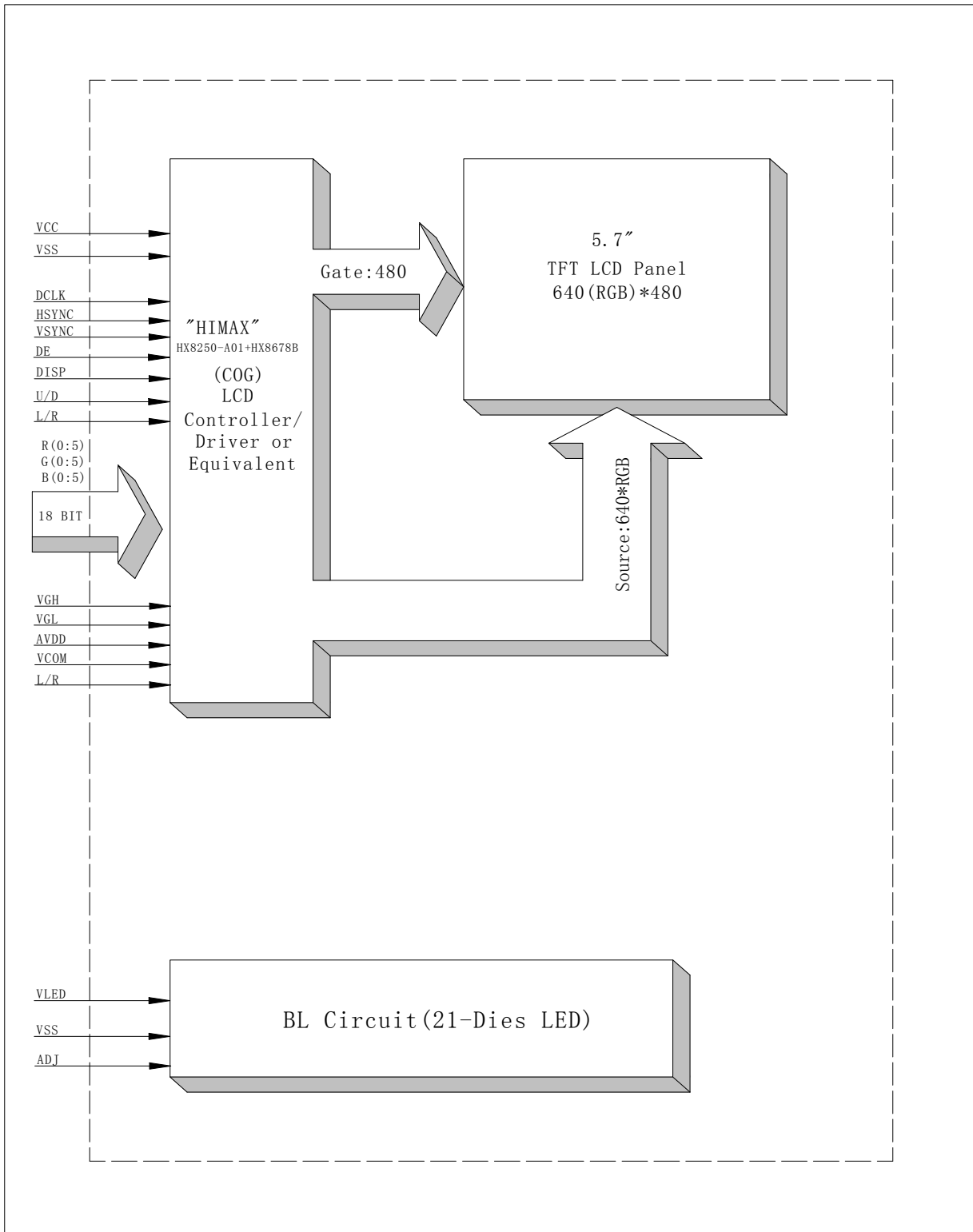
# 1. General Specification

<b>Item</b>	<b>Contents</b>	<b>Unit</b>
LCD TYPE	TFT/TRANSMISSIVE	
MODULE SIZE (W*H*T)	127.00*98.43*5.80	MM
ACTIVE SIZE (W*H)	115.20*86.40	MM
PIXEL PITCH (W*H)	0.18*0.18	MM
NUMBER OF DOTS	640*480	
DRIVER IC	HX8250-A+HX8678-B	
INTERFACE TYPE	18-BIT RGB	
TOP POLARIZER TYPE	GLARE	
RECOMMEND VIEWING DIRECTION	6	O'CLOCK
GRAY SCALE INVERSION DIRECTION	12	O'CLOCK
BACKLIGHT TYPE	21-DIES WHITE LED	
TOUCH PANEL TYPE	WITHOUT	





### 3. Block Diagram





## 4. Interface Pin Function

Pin No.	Symbol	Description
1	U/D	Up/down scan setting. When U/D=H, reverse scan. When U/D=L, normal scan.
2	NC	No connection.
3	HSYNC	Horizontal sync input in digital RGB and CCIR601 mode. (Short to GND if not used)
4~6	VLED	Power supply for BLU LDO circuit.
7	VCC	Power supply.
8	VSYNC	Vertical sync input in digital RGB and CCIR601 mode. (Short to GND if not used)
9	DE	Input data enable control. When DE mode, active High to enable data input. Default pull low.
10	NC(X2)	No connection.(Touch panel control PIN: X2)
11	NC(Y1)	No connection.(Touch panel control PIN: Y1)
12	ADJ	Chip Enable (Active High).
13~15	B5~B3	Blue data input.
16	VSS	Power ground.
17~19	B2~B0	Blue data input.
20	VSS	Power ground.
21~23	G5~G3	Green data input.
24	VSS	Power ground.
25~27	G2~G0	Green data input.
28	VSS	Power ground.
29~31	R5~R3	Red data input.
32	VSS	Power ground.
33~35	R2~R0	Red data input.
36	NC(X1)	No connection.(Touch panel control PIN: X1)
37	NC(Y2)	No connection.(Touch panel control PIN: Y2)
38	DCLK	Clock signal. Latching data at the rising edge.
39	VSS	Power ground.
40	L/R	The shift direction of device internal shift register is controlled by this pin as shown below: L/R=H: STH->SO1->•••->SO960->STHO L/R=L: STH->SO960->•••->SO1->STHO



## 5. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply voltage for analog	VCC	-0.5	5.0	V
Supply voltage for logic	VCC	-0.5	5.0	V
Supply current (One LED)	I <sub>LED</sub>		40	mA
Operating temperature	T <sub>OP</sub>	-20	+70	°C
Storage temperature	T <sub>ST</sub>	-30	+80	°C

Note: The absolute maximum rating values of this product are not allowed to be exceeded at any times. Should a module be used with any of the absolute maximum ratings exceeded, the characteristics of the module may not be recovered, or in an extreme case, the module may be permanently destroyed.





## 6. Electrical Characteristics

### 6.1 Input Power

Item	Symbol	Min	Typ.	Max	Unit	Applicable terminal
Supply Voltage for Analog	VCC	2.7	3.3	3.6	V	
Supply Voltage for Logic	VCC	2.7	3.3	3.6	V	
Input Voltage	V <sub>IL</sub>	-0.3	-	0.2VCC	V	
	V <sub>IH</sub>	0.8 VCC	-	VCC		
Input leakage Current	I <sub>LKG</sub>	-1		1	μA	

### 6.2 Backlight Driving Conditions

Item	Symbol	Value			Unit	Remark
		Min.	Typ.	Max.		
Voltage for LED Backlight	V <sub>F</sub>	8.4	9.6	10.2	V	I <sub>L</sub> =140mA
Current for LED Backlight	I <sub>L</sub>		140		mA	
Power Consumption	P		1.344		W	
LED Life Time		30,000	50,000		Hr	Note
Power supply for LED	V <sub>LED</sub>	4.5	5.0	5.5	V	
ADJ frequency		19K	20K	21K	Hz	
ADJ input voltage	V <sub>IH</sub>	3.0		3.3	V	
ADJ input voltage	V <sub>IL</sub>	0		0.3	V	
Module current	I <sub>VCC</sub>	103		123	MA	
Power consumption	P(VCC)	0.3296		0.3936	W	

Note: Brightness to be decreased to 50% of the initial value at ambient temperature TA=25°C

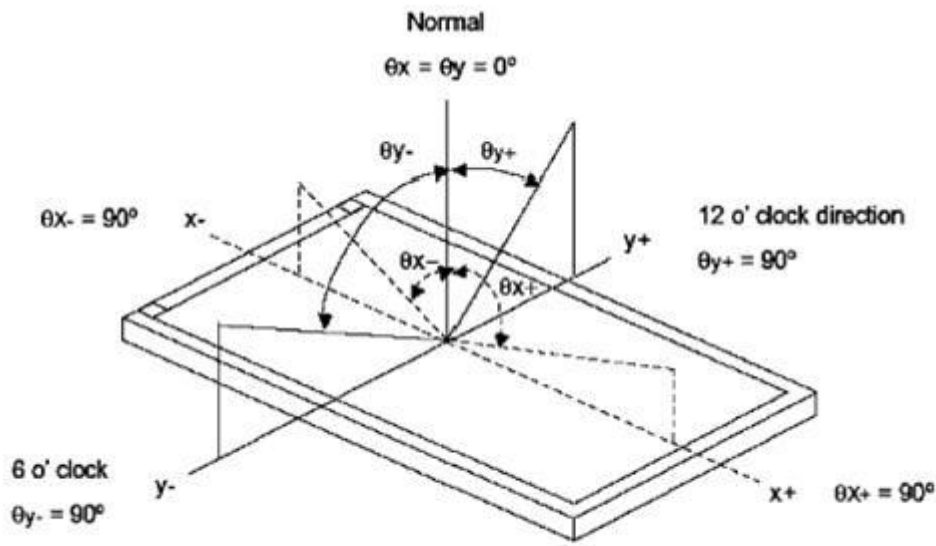


## 7. Optical Characteristics

ITEM	SYMBOL	CONDITIONS	SPECIFICATIONS			UNIT	NOTE
			MIN	TYP.	MAX		
Luminance	L		560	700	840	Cd/m <sup>2</sup>	
Contrast Ratio	CR	$\theta=25^\circ$	200	300			
Response Time	T <sub>ON</sub>	25°C		10	20	ms	
	T <sub>OFF</sub>			15	30		
CIE Color Coordinate	Red	X <sub>R</sub>					
		Y <sub>R</sub>					
	Green	X <sub>G</sub>					
		Y <sub>G</sub>					
	Blue	X <sub>B</sub>					
		Y <sub>B</sub>					
	White	X <sub>W</sub>		0.248	0.288		
Y <sub>W</sub>			0.281	0.321	0.361		
Viewing Angle	Hor.	$\theta_{x+}$		70		Degree	
		$\theta_{x-}$		70			
	Ver.	$\theta_{+}$		60			
		$\theta_{-}$		40			
Uniformity	Un		75	80		%	



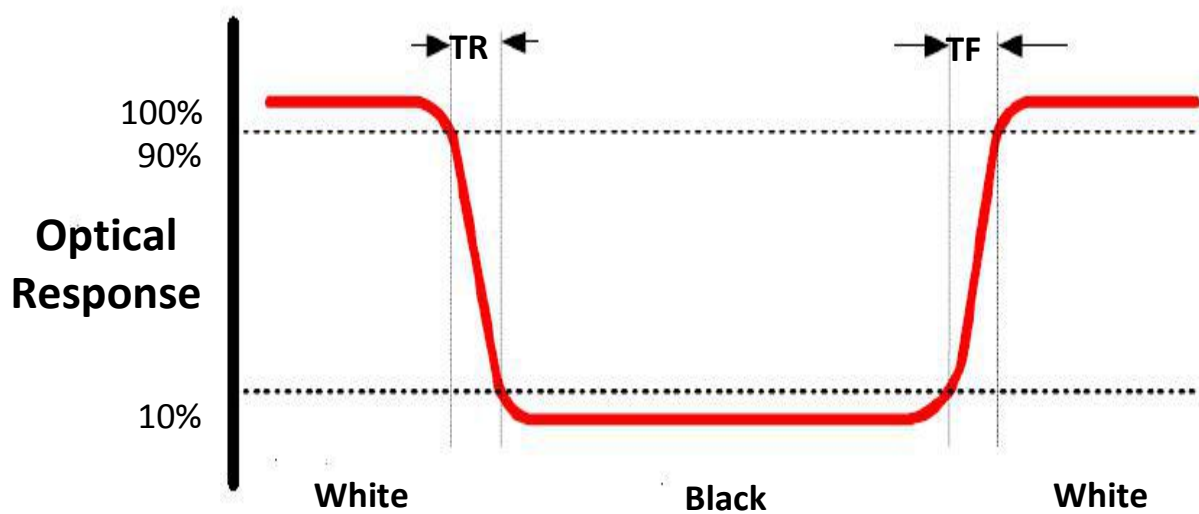
**Note 1: Definition of Viewing Angle  $\theta_x$  and  $\theta_y$ :**



**Note 2: Definition of contrast ratio CR:**

$$CR = \frac{\text{Luminance of white state}}{\text{Luminance of black state}}$$

**Note 3: Definition of Response Time ( $T_r, T_f$ )**

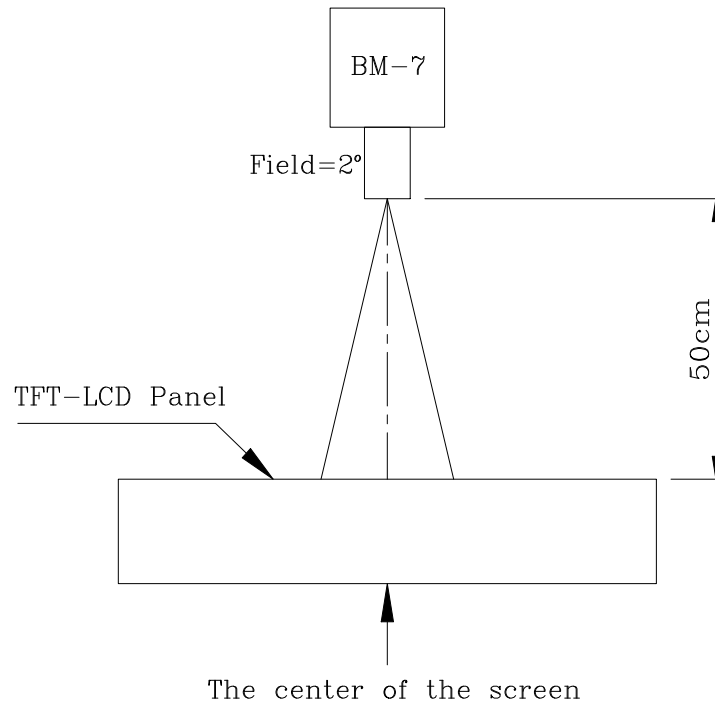




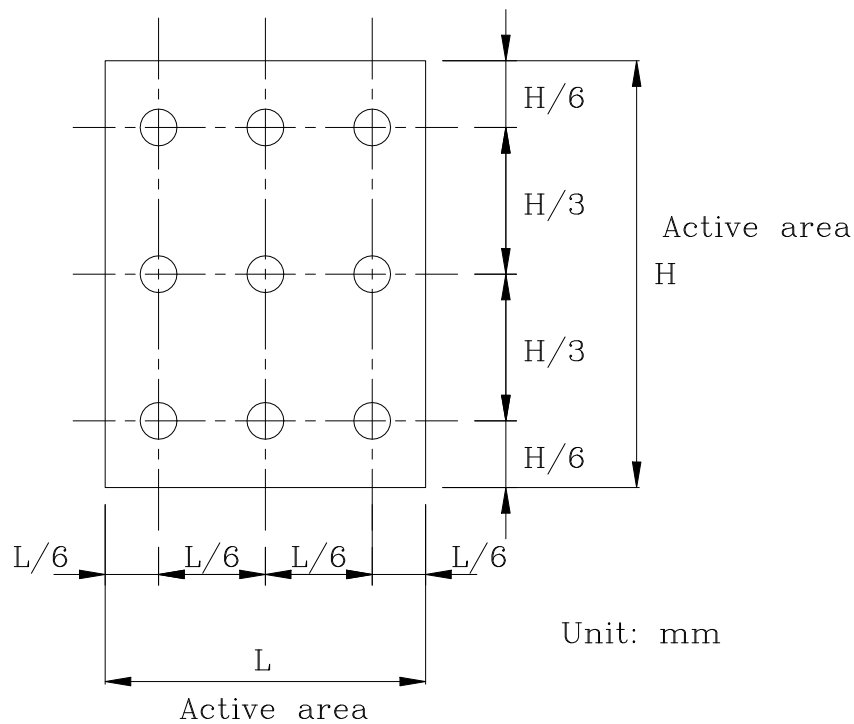
## Note 4: Definition of Luminance

### ① The Brightness Test Equipment Setup

Field=2°(As measuring "black" image, field=2°is the best testing condition)



### ② The Brightness Test Point Setup





## 8. Timing Characteristics

### 8.1 AC Electrical Characteristics

PARAMETER	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
HS setup time	$T_{hst}$	10	-	-	ns
HS hold time	$T_{hhd}$	10	-	-	ns
VS setup time	$T_{vst}$	10	-	-	ns
VS hold time	$T_{vhd}$	10	-	-	ns
Data setup time	$T_{dsu}$	10	-	-	ns
Data hold time	$T_{dhd}$	10	-	-	ns
DEN setup time	$T_{esu}$	10	-	-	ns
VS falling to HS falling time on odd field @ RGB mode	$T_{HV\_O}$	-4	0	+4	$T_{CPH}$
VS falling to HS falling time on even field @ RGB mode	$T_{HV\_E}$	0.4	0.5	0.6	$T_H$
Source output settling time	$T_{ST}$	-	12	20	$\mu s$
Source output loading R	$R_{SL}$	-	2	-	K ohm
Source output loading C	$C_{SL}$	-	60	-	pF
POL output delay time	$T_{DP}$	-	-	40	ns

### 8.2 Digital Parallel RGB interface

PARAMETER	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
CLK frequency	$F_{CPH}$	-	25.175	-	MHZ
CLK period	$T_{CPH}$	-	39.7	-	ns
CLK pulse duty	$T_{CWH}$	40	50	60	%
HS period	$T_H$	-	800	-	$T_{CPH}$
HS pulse width	$T_{WH}$	5	30	-	$T_{CPH}$
HS-first horizontal data time	$T_{HS}$	112	144	175	$T_{CPH}$
DEN pulse width	$T_{EP}$	-	640	-	$T_{CPH}$
VS pulse width	$T_{WV}$	1	3	5	$T_H$
VS-DEN time	$T_{STV}$	-	35	-	$T_H$
VS period	$T_V$	-	525	-	$T_H$

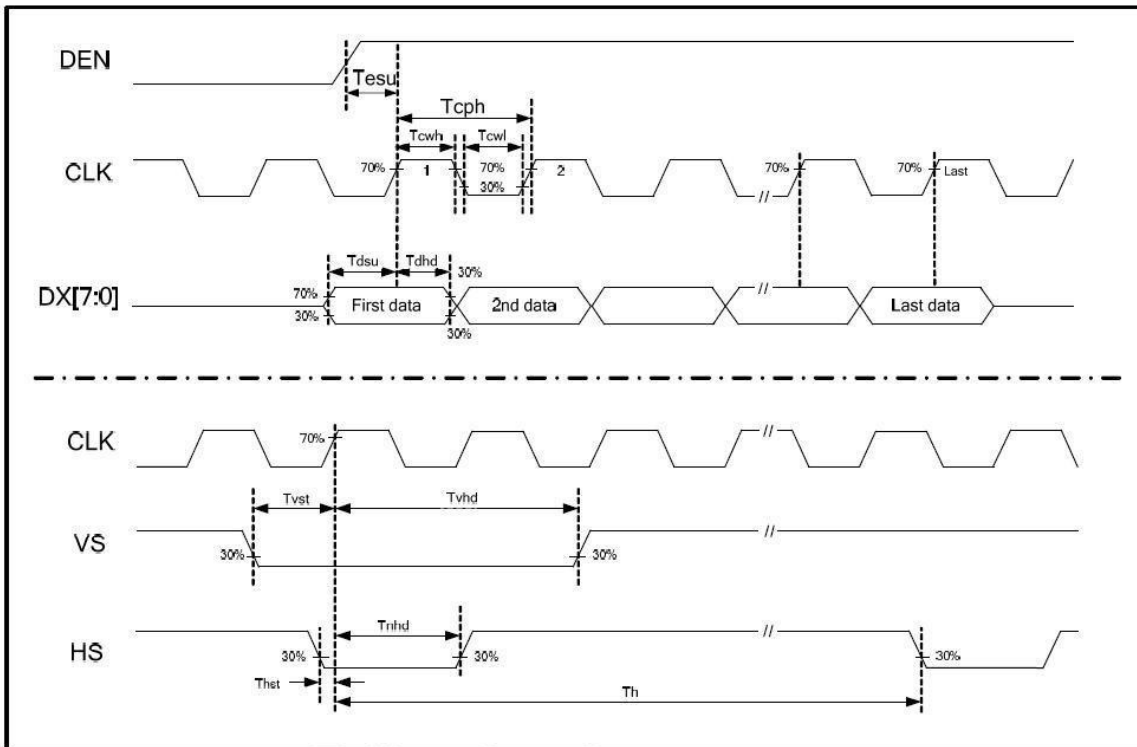
Note: When SYNC mode is used, 1st data start from 144th CLK after HS falling (when  $STHD[5:0]=00000$ )

PARAMETER	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
OEV pulse width	$T_{OEV}$	-	100	-	$T_{CPH}$
CKV pulse width	$T_{CKV}$	-	96	-	$T_{CPH}$
HS-CKV time	$T_1$	-	52	-	$T_{CPH}$
HS-OEV time	$T_2$	-	8	-	$T_{CPH}$
HS-POL time	$T_3$	-	72	-	$T_{CPH}$
STV setup time	$T_{SUV}$	-	46	-	$T_{CPH}$
STV pulse width	$T_{WSTV}$	-	1	-	$T_H$

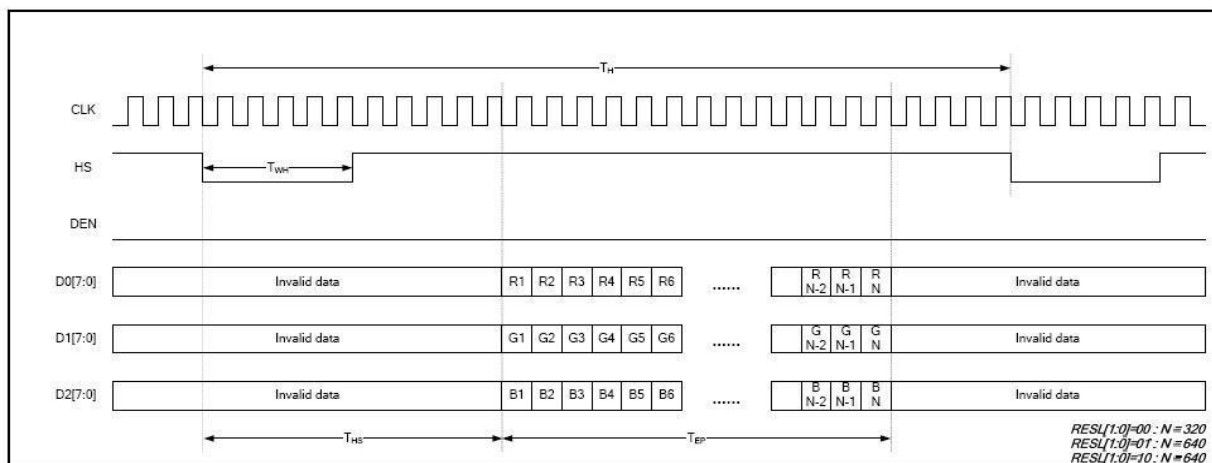


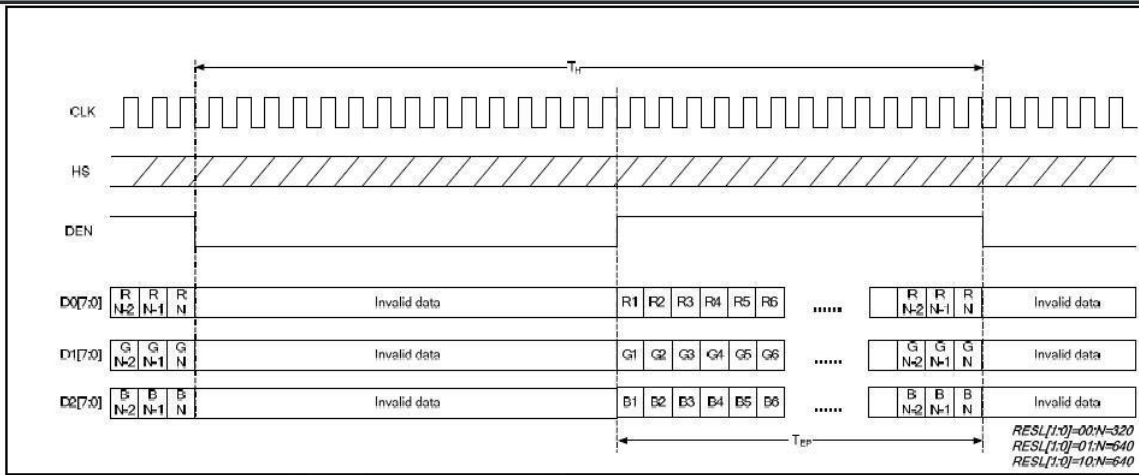


### 8.3 Clock and Data input waveforms



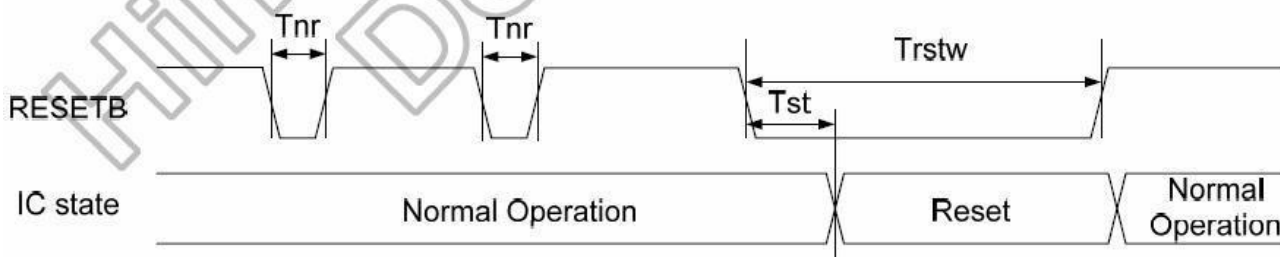
### 8.4 Data input format for RGB mode





## 8.5 Hardware reset timing

PARAMETER	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
RESETB low pulse width	$T_{rstw}$	10	-	-	$\mu s$
Negative noise pulse width	$T_{nr}$		-	2	$\mu s$
Reset start time	$T_{st}$	2	-		$\mu s$





## 9. Standard Specification for Reliability

### 9.1 Standard Specification for Reliability of LCD Module

No	Test Item	Condition	Remarks
1	High Temperature Operation	Ts = +70°C, 240 hours	IEC60068-21:2007 GB2423.2-2008
2	Low Temperature Operation	Ta = -20°C, 240 hours	IEC60068-2-1:2007 GB/2423.1-2008
3	High Temperature Storage	Ta = +80°C, 240 hours	IEC60068-21:2007 GB/2423.2-2008
4	Low Temperature Storage	Ta = -30°C, 240 hours	IEC60068-21:2007 GB/2423.1-2008
5	Storage at High Temperature and Humidity	Ta = +60°C, 90% RH max, 240 hours	IEC60068-2-78 :2001 GB/T2423.3—2006
6	Thermal Shock (non-operation)	-30°C 30 min~+80°C 30 min, Change time:5min, 20 Cycle	Start with cold temperature, End with high temperature, IEC60068-214:1984, GB/2423.22-2002
7	ESD	C=150pF,R=330Ω,5point/panel Air:±8Kv,5times; Contact:±4Kv,5times (Environment:15°C~35°C, 30%~60%.86Kpa~106Kpa)	IEC61000-42:2001 GB/T17626.2-2006
8	Vibration Test	Frequency range:10~55Hz Stroke:1.5mm Sweep:10Hz~55Hz~10Hz 2 hours for each direction of X.Y.Z (6 hours for total)	IEC60068-2-6:1982 GB/T2423.101995
9	Mechanical Shock (Non Op)	Half Sine Wave60G 6ms, ±X,±Y,±Z 3times for each direction	IEC60068-2-27:1987 GB/T2423.5—1995
10	Package Drop Test	Height:80cm, 1corner,3 edges,6 surfaces	IEC60068-2-32:1990 GB/T2423.8—1995

Note1: Ts is the temperature of panel's surface.

Note2: Ta is the ambient temperature of sample.





## 9.2 Testing Conditions and Inspection Criteria

For the final test, the testing sample must be stored at room temperature for 24 hours. After the tests listed in Table 9.2, standard specifications for reliability will be executed in order to ensure stability.

No.	Item	Test Model	In section Criteria
01	Current Consumption	Refer To Specification	The current consumption should conform to the product specification.
02	Contrast	Refer To Specification	After the tests have been executed, the contrast must be larger than half of its initial value prior to the tests.
03	Appearance	Visual inspection	Defect free.

## 9.3 MTBF

MTBF	Functions, performance, appearance, etc. shall be free from remarkable deterioration within 50,000 hours under ordinary operating and storage conditions room temperature ( $25\pm 5^{\circ}\text{C}$ ), normal humidity ( $50\pm 10\%$ RH), and in area not exposed to direct sun light.
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## 10. Specification of Quality Assurance

This standard of Quality Assurance confirms to the quality of LCD module products supplied by KINGTECH.

### 10.1 Quality Test

Before delivering, the supplier should conduct the following tests to confirm the quality of products.

- Electrical-Optical Characteristics: According to the individual specification to test the product.
- Appearance Characteristics: According to the individual specification to test the product.
- Reliability Characteristics: According to the definition of reliability on the specification for testing products.

### 10.2 Delivery Test

Before delivering, the supplier should conduct the delivery test.

- Test method: According to MIL-STD105E.General Inspection Level II take a single Time.
- The defects classify of AQL as following:  
Major defect: AQL = 0.65  
Minor defect: AQL = 1.5  
Total defects: AQL = 1.5

### 10.3 Non-conforming Analysis & Deal With Manners

#### 10.3.1 Non-conforming Analysis

- Purchaser should provide the data detail of non-conforming sample and the non-conforming.
- After receiving the data detail from purchaser, the analysis of non-conforming should be finished within two weeks.
- If the analysis can't be finished on time, supplier must notice purchaser 3 days in advance.



### 10.3.2 Disposition of non-conforming

- If any product defect be found during assembling, supplier must change the good for every defect after confirmation.
- Both supplier and customer should analyze the reason and discuss the disposition of non-conforming when the reason of nonconforming is not sure.

### 10.4 Agreement items

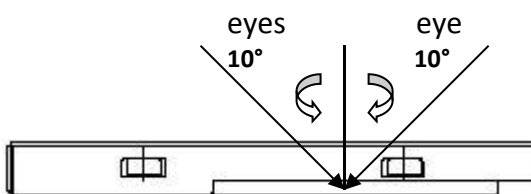
Both parties should negotiate together when the following problems happen.

- There is any problem of standard of quality assurance, and both sides should agree that it must be modified.
- There is any argument item which does not record in the standard of quality assurance.
- Any other special problem.

### 10.5 Standard of The Product Appearance Test

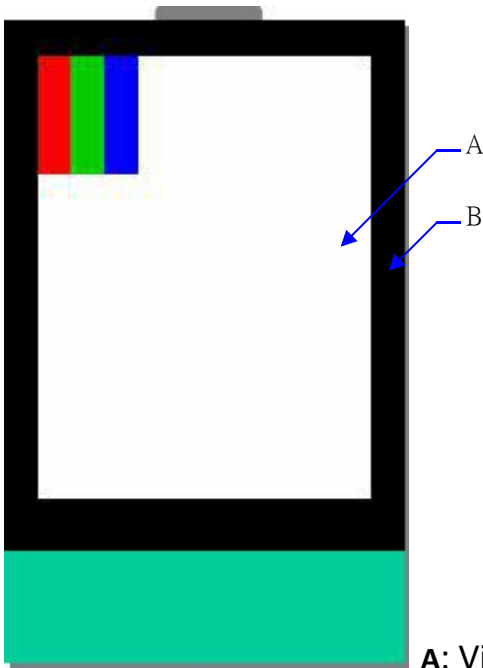
#### 10.5.1 Manner of appearance test

- The test must be under 20W × 2 or 40W fluorescent light, and the distance of view must be at 30±5cm.
- When test the model of transmissive product must add the reflective plate.
- The test direction is base on around 10° of vertical line.
- Temperature: 25±5°C Humidity: 60±10%RH





- Definition of area:



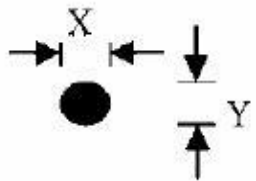
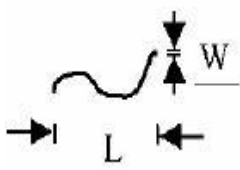
A: Viewing area B: Outside viewing area

### 10.5.2 Basic principle

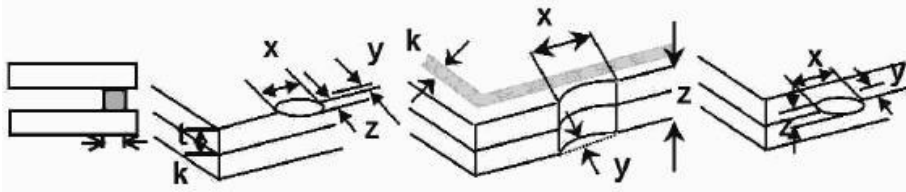
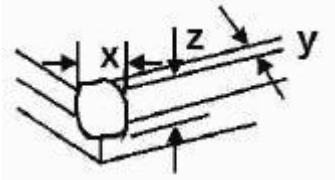
- When the standard can not be described, AQL will be applied.
- The sample of the lowest acceptable quality level must be negotiated by both supplier and customer when any dispute happened.
- New item must be added on time when it is necessary.



## 10.6 Inspection Specification

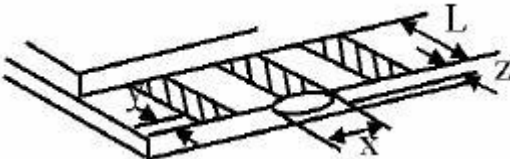
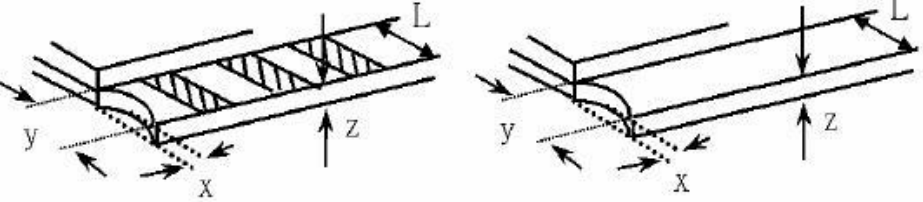
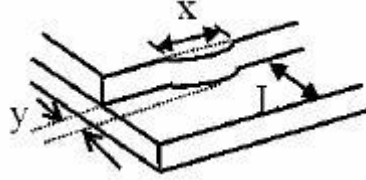
NO.	Item	Criterion	AQL												
01	Electrical Testing	1.1 Missing vertical, horizontal segment, segment contrast defect. 1.2 Missing character, dot or icon. 1.3 Display malfunction. 1.4 No function or no display. 1.5 Current consumption exceeds product specifications. 1.6 LCD viewing angle defect. 1.7 Mixed product types. 1.8 Flicker	0.65												
02	Black or White spots or Bright spots or Color spots on LCD (Display only)	2.1 White and black or color spots on display $\leq 0.25\text{mm}$ , no more than Five spots. 2.2 Densely spaced: No more than three spots within 3mm.	1.5												
03	LCD and Touch Panel black spots, white spots, contamination (non – display)	3.1 Round type: As following drawing $\Phi = (X+Y) / 2$  <table border="1" data-bbox="821 1164 1356 1422"> <thead> <tr> <th>Size(mm)</th> <th>Acceptable Q'ty</th> </tr> </thead> <tbody> <tr> <td><math>\Phi \leq 0.10</math></td> <td>Accept no dense</td> </tr> <tr> <td><math>0.10 &lt; \Phi \leq 0.20</math></td> <td>2</td> </tr> <tr> <td><math>0.20 &lt; \Phi \leq 0.25</math></td> <td>2</td> </tr> <tr> <td><math>0.25 &lt; \Phi \leq 0.30</math></td> <td>1</td> </tr> <tr> <td><math>0.30 &lt; \Phi</math></td> <td>0</td> </tr> </tbody> </table> <p>* Densely spaced: No more than two spots within 3mm.</p>	Size(mm)	Acceptable Q'ty	$\Phi \leq 0.10$	Accept no dense	$0.10 < \Phi \leq 0.20$	2	$0.20 < \Phi \leq 0.25$	2	$0.25 < \Phi \leq 0.30$	1	$0.30 < \Phi$	0	1.5
		Size(mm)	Acceptable Q'ty												
$\Phi \leq 0.10$	Accept no dense														
$0.10 < \Phi \leq 0.20$	2														
$0.20 < \Phi \leq 0.25$	2														
$0.25 < \Phi \leq 0.30$	1														
$0.30 < \Phi$	0														
3.2 Line type: (As following drawing)  <table border="1" data-bbox="726 1545 1356 1825"> <thead> <tr> <th>Length(mm)</th> <th>Width(mm)</th> <th>Acceptable Q'ty</th> </tr> </thead> <tbody> <tr> <td>---</td> <td><math>W \leq 0.02</math></td> <td>Accept no dense</td> </tr> <tr> <td><math>L \leq 3.0</math></td> <td><math>0.02 &lt; W \leq 0.05</math></td> <td rowspan="2">2</td> </tr> <tr> <td><math>L \leq 2.5</math></td> <td><math>0.03 &lt; W \leq 0.08</math></td> </tr> <tr> <td>---</td> <td><math>0.08 &lt; W</math></td> <td>Rejection</td> </tr> </tbody> </table> <p>* Densely spaced: No more than two lines within 3mm.</p>	Length(mm)	Width(mm)	Acceptable Q'ty	---	$W \leq 0.02$	Accept no dense	$L \leq 3.0$	$0.02 < W \leq 0.05$	2	$L \leq 2.5$	$0.03 < W \leq 0.08$	---	$0.08 < W$	Rejection	1.5
Length(mm)	Width(mm)	Acceptable Q'ty													
---	$W \leq 0.02$	Accept no dense													
$L \leq 3.0$	$0.02 < W \leq 0.05$	2													
$L \leq 2.5$	$0.03 < W \leq 0.08$														
---	$0.08 < W$	Rejection													



NO.	Item	Criterion	AQL																		
04	Polarizer bubbles	If bubbles are visible, judge using black spot specifications, not easy to find, must check in specify direction	Size $\Phi$ (mm)	Acceptable Q'ty																	
			$\Phi \leq 0.30$	Accept no dense																	
			$0.30 < \Phi \leq 0.50$	0																	
			$0.50 < \Phi \leq 1.00$	0																	
			$1.00 < \Phi$	0																	
			Total Q'ty	0																	
05	Scratches	Follow NO.3 -2 Line Type.																			
06	Chipped glass	<p>Symbols:                      x: Chip length    y: Chip width    z: Chip thickness                      k: Seal width    t: Glass thickness    a: LCD side length                      L: Electrode pad length</p> <p>6.1 General glass chip:                      6.1.1 Chip on panel surface and crack between panels:</p>  <table border="1" data-bbox="399 1187 1220 1355"> <thead> <tr> <th>z: Chip thickness</th> <th>y: Chip width</th> <th>x: Chip length</th> </tr> </thead> <tbody> <tr> <td><math>Z \leq 1/2t</math></td> <td>Not over viewing area</td> <td><math>x \leq 2MM</math></td> </tr> <tr> <td><math>1/2t &lt; z \leq 2t</math></td> <td>Not exceed 1/3k</td> <td><math>x \leq 2MM</math></td> </tr> </tbody> </table> <p>⊙ Unit: mm                      ⊙ If there are 2 or more chips, x is the total length of each chip</p> <p>6.1.2 Corner crack:</p>  <table border="1" data-bbox="399 1680 1220 1848"> <thead> <tr> <th>z: Chip thickness</th> <th>y: Chip width</th> <th>x: Chip length</th> </tr> </thead> <tbody> <tr> <td><math>Z \leq 1/2t</math></td> <td>Not over viewing area</td> <td><math>x \leq 2MM</math></td> </tr> <tr> <td><math>1/2t &lt; z \leq 2t</math></td> <td>Not exceed 1/3k</td> <td><math>x \leq 2MM</math></td> </tr> </tbody> </table> <p>⊙ Unit: mm                      ⊙ If there are 2 or more chips, x is the total length of each chip</p>	z: Chip thickness	y: Chip width	x: Chip length	$Z \leq 1/2t$	Not over viewing area	$x \leq 2MM$	$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 2MM$	z: Chip thickness	y: Chip width	x: Chip length	$Z \leq 1/2t$	Not over viewing area	$x \leq 2MM$	$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 2MM$	1.5
		z: Chip thickness	y: Chip width	x: Chip length																	
		$Z \leq 1/2t$	Not over viewing area	$x \leq 2MM$																	
		$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 2MM$																	
z: Chip thickness	y: Chip width	x: Chip length																			
$Z \leq 1/2t$	Not over viewing area	$x \leq 2MM$																			
$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 2MM$																			





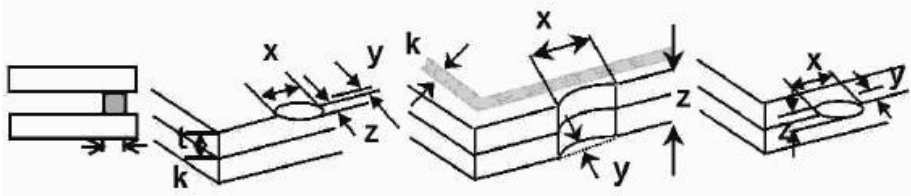
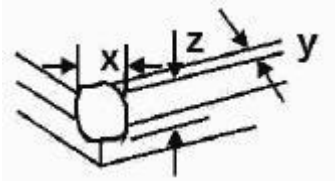
NO.	Item	Criterion	AQL																
07	Glass crack	<p>Symbols:                      x: Chip length    y: Chip width    z: Chip thickness                      k: Seal width    t: Glass thickness    a: LCD side length                      L: Electrode pad length</p> <p>7.2 Protrusion over terminal:                      7.2.1 Chip on electrode pad:</p>  <table border="1" data-bbox="558 728 1236 884"> <tr> <td>y: Chip width</td> <td>x: Chip length</td> <td>z: Chip thickness</td> </tr> <tr> <td><math>y \leq 0.5\text{mm}</math></td> <td><math>x \leq 2\text{MM}</math></td> <td><math>0 &lt; z \leq t</math></td> </tr> </table> <p>7.2.2                      Non-conductive portion:</p>  <table border="1" data-bbox="558 1265 1236 1422"> <tr> <td>y: Chip width</td> <td>x: Chip length</td> <td>z: Chip thickness</td> </tr> <tr> <td><math>y \leq L</math></td> <td><math>x \leq 2\text{MM}</math></td> <td><math>0 &lt; z \leq t</math></td> </tr> </table> <p>⊙ If there chipped area touches the ITO terminal, over 2/3 of the ITO must remain and be inspected according to electrode terminal specifications.                      ⊙ If the product will be heat sealed by the customer, the alignment mark must not be damaged.</p> <p>7.2.3 Substrate protuberance and internal crack</p>  <table border="1" data-bbox="885 1758 1316 1892"> <tr> <td>y: width</td> <td>x: length</td> </tr> <tr> <td><math>y \leq 1/3L</math></td> <td><math>x \leq 2\text{MM}</math></td> </tr> </table>	y: Chip width	x: Chip length	z: Chip thickness	$y \leq 0.5\text{mm}$	$x \leq 2\text{MM}$	$0 < z \leq t$	y: Chip width	x: Chip length	z: Chip thickness	$y \leq L$	$x \leq 2\text{MM}$	$0 < z \leq t$	y: width	x: length	$y \leq 1/3L$	$x \leq 2\text{MM}$	1.5
y: Chip width	x: Chip length	z: Chip thickness																	
$y \leq 0.5\text{mm}$	$x \leq 2\text{MM}$	$0 < z \leq t$																	
y: Chip width	x: Chip length	z: Chip thickness																	
$y \leq L$	$x \leq 2\text{MM}$	$0 < z \leq t$																	
y: width	x: length																		
$y \leq 1/3L$	$x \leq 2\text{MM}$																		



NO.	Item	Criterion	AQL
08	Cracked glass	No crack is allowed.	1.5
09	Backlight elements	9.1 Illumination source flickers when lit. 9.2 Spots or scratches that appear when lit must be judged. Using LCD spot, lines and contamination standards. 9.3 Backlight doesn't light or color is wrong.	1.5 1.5 0.65
10	Bezel	No scratches with W>0.1 and Length>2.5mm.	1.5
11	PCB、COB	11.1 COB seal may not have pinholes larger than 0.2mm or contamination. 11.2 COB seal surface may not have pinholes through to the IC. 11.3 The height of the COB should not exceed the height indicated in the assembly diagram. 11.4 There may not be more than 2mm of sealant outside the seal area on PCB. And there should be no more than three places. 11.5 Parts on PCB must be the same as on the production characteristic chart, There should be no wrong parts, missing parts or excess parts. 11.6 The jumper on the PCB should conform to the product characteristic chart.	1.5 1.5 1.5 1.5 0.65 0.65
12	FPC	FPC damage per IPC guidelines.(IPC-A-610) Nicks or damage along the edges of the flexible printed circuitry and cutouts, providing the penetration does not exceed 50% of the distance from the edge to the nearest conductor to 2.5mm[0.1in], Whichever is less.	1.5
13	Soldering	13.1 No cold solder joints, missing solder connections, oxidation or icicle. 13.2 No short circuits in components on PCB or FPC. 13.3 Soldering per IPC guidelines.(IPC-A-610)	1.5 0.65





NO.	Item	Criterion	AQL												
14	Touch Panel Chipped glass	<p>Symbols:                      x: Chip length    y: Chip width    z: Chip thickness                      k: Seal width    t: Touch Panel Total thickness    a: LCD side length                      L: Electrode pad length</p> <p>14.1 General glass chip:                      14.1.1 Chip on panel surface and crack between panels:</p>  <table border="1" data-bbox="448 763 1267 981"> <tr> <td>z: Chip thickness</td> <td>y: Chip width</td> <td>x: Chip length</td> </tr> <tr> <td><math>Z \leq t</math></td> <td><math>\leq 1/2 k</math> and not over viewing area</td> <td><math>x \leq 2MM</math></td> </tr> </table> <p>⊙ Unit: mm                      ⊙ If there are 2 or more chips, x is the total length of each chip</p> <p>14.1.2 Corner crack:</p>  <table border="1" data-bbox="448 1379 1267 1597"> <tr> <td>z: Chip thickness</td> <td>y: Chip width</td> <td>x: Chip length</td> </tr> <tr> <td><math>z \leq t</math></td> <td><math>\leq 1/2 k</math> and not over viewing area</td> <td><math>x \leq 2MM</math></td> </tr> </table> <p>⊙ Unit: mm                      ⊙ If there are 2 or more chips, x is the total length of each chip</p>	z: Chip thickness	y: Chip width	x: Chip length	$Z \leq t$	$\leq 1/2 k$ and not over viewing area	$x \leq 2MM$	z: Chip thickness	y: Chip width	x: Chip length	$z \leq t$	$\leq 1/2 k$ and not over viewing area	$x \leq 2MM$	1.5
z: Chip thickness	y: Chip width	x: Chip length													
$Z \leq t$	$\leq 1/2 k$ and not over viewing area	$x \leq 2MM$													
z: Chip thickness	y: Chip width	x: Chip length													
$z \leq t$	$\leq 1/2 k$ and not over viewing area	$x \leq 2MM$													



NO.	Item	Criterion	AQL										
15	Touch Panel(Fish eye、dent and bubble on film)	<table border="1"> <thead> <tr> <th>SIZE(mm)</th> <th>Acceptable Q'ty</th> </tr> </thead> <tbody> <tr> <td><math>\Phi \leq 0.2</math></td> <td>Accept no dense</td> </tr> <tr> <td><math>0.2 &lt; D \leq 0.4</math></td> <td>5</td> </tr> <tr> <td><math>0.4 &lt; D \leq 0.5</math></td> <td>2</td> </tr> <tr> <td><math>0.5 &lt; D</math></td> <td>0</td> </tr> </tbody> </table> 	SIZE(mm)	Acceptable Q'ty	$\Phi \leq 0.2$	Accept no dense	$0.2 < D \leq 0.4$	5	$0.4 < D \leq 0.5$	2	$0.5 < D$	0	1.5
SIZE(mm)	Acceptable Q'ty												
$\Phi \leq 0.2$	Accept no dense												
$0.2 < D \leq 0.4$	5												
$0.4 < D \leq 0.5$	2												
$0.5 < D$	0												
16	Touch Panel Newton ring	Newton ring dimension $\leq 1/2$ touch panel area and not affect font and line distortion( $\leq 2.5\%$ ) , it is acceptable.	1.5										
17	Touch Panel Linearity	Less than 1.5% is acceptable.	1.5										
18	LCD Ripple	Touch the touch panel , can not see the LCD ripple. Pen: R 1.0mm silicon rubber. Operation Force: 80g	1.5										
19	General appearance	19.1 Pin type must match type in specification sheet. 19.2 LCD pin loose or missing pins. 19.3 Product packaging must the same as specified on packaging specification sheet. 19.4 Product dimension and structure must conform to product specification sheet.	0.65 0.65 0.65 0.65										



## 11. Handling Precaution

### 11.1 Handling of LCM

- Avoid external shock.
- Don't apply excessive force on the surface.
- Liquid in LCD is hazardous substance, do not lick or swallow. When the liquid is attaching to your hand, skin, cloth, etc., wash it thoroughly and immediately.
- Don't operate it above the absolute maximum rating.
- Don't disassemble the LCM.
- The operators should wear protections whenever he/she comes into contact with the module. Never touch any of the conductive parts such as the LSI pads, the copper leads on the PCB and the interface terminals with any parts of the human body.
- The modules should be kept in antistatic bags or other containers resistant to static for storage.
- The module is coated with a film to protect the display surface, be careful when peeling off this protective film since static electricity may be generated.

### 11.2 Storage

- Store it in an ambient temperature of  $25\pm 10^{\circ}\text{C}$ , and in a relative humidity of  $50\pm 10\%\text{RH}$ . Don't expose to sunlight or fluorescent light.
- Store it in a clean environment, free from dust, active gas, and solvent.
- Store it in anti-static electricity container.
- Store it without any physical load.

### 11.3 Soldering

- Use only soldering irons with proper grounding and no leakage.
- Iron: no higher than  $280\pm 10^{\circ}\text{C}$  and less than 3 sec during hand soldering.
- Rewiring: no more than 2 times.



## 12.Packing Method

No.	Item	Dimensions(mm)	Quantity	Remark
1	LCM Module	127.00*98.43*5.80	30PCS	
2	PALLET	344*285*175 (include 30pcs products/one tray)	1PCS	
3	CARTON	329*345*115 (include 30pcs products/one carton)	1PCS	