DWIN
ideal partner for you
Professional, Creditable, Successful

LI80480C050HA9098-TR

5.0 inch, 800×480, IPS screen with wide viewing angle, air bonding RTP

Disclaimer：The product design is subject to alternation and improvement without prior notice.

Table of Contents

1 General Feature

1.1 LCD Parameters

Feature		Description	Unit
Display Spec.	Size	5.0	inch
	Resolution	800(H)*480(V)	pixels
	Pixel Configuration	RGB stripe	-
	Pixel Pitch	0.135(W)*0.135(H)	mm
	Viewing Direction	ALL	-
Mechanical Characteristics	Outside Dimension	120.7(W)*75.8(H)*3.0(D)	mm
	Active Area	108.0(W)*64.8(H)	mm
	Luminance	600	cd/m²
	LED Numbers	20 LEDS	-
	Pin Order	From left to right 40PIN_0.5mm	-
	Weight	-	g
Electrical Characteristics	Interface	RGB_24bit	-
	Color Depth	16.7M	colors
	Driver Condition	3.3(Type)	V
	LCM Driver IC	ST7262-G4-1-H	-
Temperature Range	Operating Temp.	-10~60	℃
	Storage Temp.	-20~70	℃

1.2 Touch Parameters

Feature	Description
Type	RTP (Resistive touch panel)
Structure	ITO Film+ ITO Glass+ FPC
Outline Size(mm)	120.20(L)*74.80(W)*1.55(T)
Active Area(mm)	110.20(L)*63.80(W)
Surface Hardness	3H
Light Transmittance	78%±3%
Operating Temperature	-20~70℃
Storage Temperature	-30~80℃

Note：Requirements on Environmental Protection: RoHS
You can use dynamic screen saver wallpapers to avoid afterimages caused by fixed paper display for a long time

DWIN
ideal partner for you
Professional, Creditable, Successful

2 Mechanical Drawing

NOTES:
1. DISPLAY TYPE : 16.7M COLOR TFT-LCD, TRANSMISSIVE, NORMALLY WHITE;
2. OPERATING TEMP.: 0~60℃
3. STORAGE TEMP.: -10~70℃
4. LCD DRIVER: ST7262-G4-1-H;
5. Backlight:20 Chip-White LEDs, Module BRIGHTNESS:900cd/m2 (typ) ;
6. GENERAL TOLERANCE:±0.2mm;
7. Mark "*" as the key size , in line with "ROHS" standard.

TP PARAMETER

STRUCTURE	ITO Film+ITOGlass+FPC		
	ITO Film	KA Anti-UV	
VOLTAGE	≤5V	HARDNESS	3H
LINEARITY	≤1.5%	TRANSMITTANCE	78%±3%
PRESSURE	30~120g	OPERATING TEMP	-20℃ ~+70℃
IMPEDANCE	X: 400~1000Ω Y:100~400Ω	STORAGE TEMP	-30℃~+80℃
LIFE	TOUCH≥1,000,000 TIMES,STROKE≥100,000 TIMES		

PIN DEFIND

pin	Assignment
1	VLED+
2	VLED-
3	GND
4	DVDD
5	R0
6	R1
7	R2
8	R3
9	R4
10	R5
11	R6
12	R7
13	G0
14	G1
15	G2
16	G3
17	G4
18	G5
19	G6
20	G7
21	B0
22	B1
23	B2
24	B3
25	B4
26	B5
27	B6
28	B7
29	GND
30	PCLK
31	DISP
32	HSYNC
33	VSYNC
34	DE
35	NC
36	GND
37	NC/XR
38	NC/YD
39	NC/XL
40	NC/YU

PIN#	Name
1	YU
2	XL
3	YD
4	XR

DWIN Technologies
LCM OUTLINE DIMENSION
MODULE NO: LI80480C050HA9098-TR

	VER	D/N	TITL.
	A		
	REV		PAGE
	0		
	SCALE	NTS	UNIT	MM
	PREPARED	CHECK	APPROVED
	DATE	DATE	DATE

Front view
Side view
Back view

TOTAL THICKNESS: 4.3±0.3
LED CIRCUIT DIAGRAM

3 Input/Output Terminals

3.1 LCD Input/Output Terminals

Pin NO.	Symbol	Function	Remark
1	VLED-	Power for LED backlight cathode	
2	VLED+	Power for LED backlight anode	
3	GND	Power ground	
4	DVDD	Power Voltage for digital circuit 3.3V	
5	R0	Red data(LSB)	
6	R1	Red data	
7	R2	Red data	
8	R3	Red data	
9	R4	Red data	
10	R5	Red data	
11	R6	Red data	
12	R7	Red data(MSB)	
13	G0	Green data(LSB)	
14	G1	Green data	
15	G2	Green data	
16	G3	Green data	
17	G4	Green data	
18	G5	Green data	
19	G6	Green data	
20	G7	Green data(MSB)	
21	B0	Blue data(LSB)	
22	B1	Blue data	
23	B2	Blue data	
24	B3	Blue data	
25	B4	Blue data	
26	B5	Blue data	
27	B6	Blue data	
28	B7	Blue data(MSB)	
29	GND	Power ground	
30	PCLK	Pixel clock	
31	DISP	Standby mode, normally pull high STBYB= "1" normal operation; STBYB="0", timing control, source driver will turn off, All output are high-Z	
32	HSYNC	Horizontal sync input in parallel RGB. Negative polarity	
33	VSYNC	Vertical sync input in parallel RGB. Negative polarity	
34	DEN	Input data enable control. When DE mode, active High to enable data input(normally pull low)	
35	NC	No connection	
36	GND	Power ground	
37	XR(NC)	Right electrode-differential analog	
38	YD(NC)	Bottom electrode-differential analog	
39	XL(NC)	Left electrode-differential analog	
40	YU(NC)	Top electrode-differential analog	

3.2 TP Input/Output Terminals

Pin NO.	Logic	Remark
1	YU	
2	XL	
3	YD	
4	XR	

4 Electrical Characteristics

4.1 Driving TFT LCD Panel

Item	Symbol	Min	Typ.	Max	Unit	Remark
Digital Power Voltage	VDD	3.0	3.3	3.6	V	
Gate on Voltage	VGH	-	15	-	V	
Gate off Voltage	VGL	-	-10	-	V	
Common Voltage	VCOM	-	0	-	V	

4.2 LED Backlight Specification

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Forward Voltage	VF	11	12	13	V	
Forward Current	IF	-	100	-	mA	
Luminance	Lv	-	600	-	cd/m^2	If=100mA
Uniformity(with L/G)	YU	75	80	-	%	
LED Life-Time	Hr	-	30000	-	Hour	

Note: 20 LEDs (4LEDs Serial,5ways Parallel)
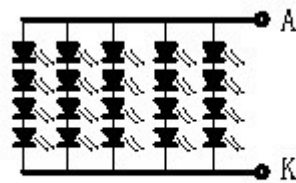
Circuit Diagram

5 Timing Characteristics

5.1 HV Mode

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
Horizontal Display Area	thd		800		DCLK
DLCK Frequency	Fclk	26.4	33.3	46.1	MHZ
HSD Period	Th	862	1056	1200	DCLK
HSD Pulse Width	thpw	1	36	40	DCLK
HSD Back Porch	thbp		48		DCLK
HSD Front Porch	tfbp	16	210	354	DCLK
Vertical Display Area	tvd		480		H
VSD period	tv	510	525	650	H
VSD Pulse Width	Tvpw	1	4	20	H
VSD Back Porch	Tvbp		12		H
VSD Front Porch	tvfp	7	22	147	H

5.2 Up-down Time Sequence
5.2.1 On
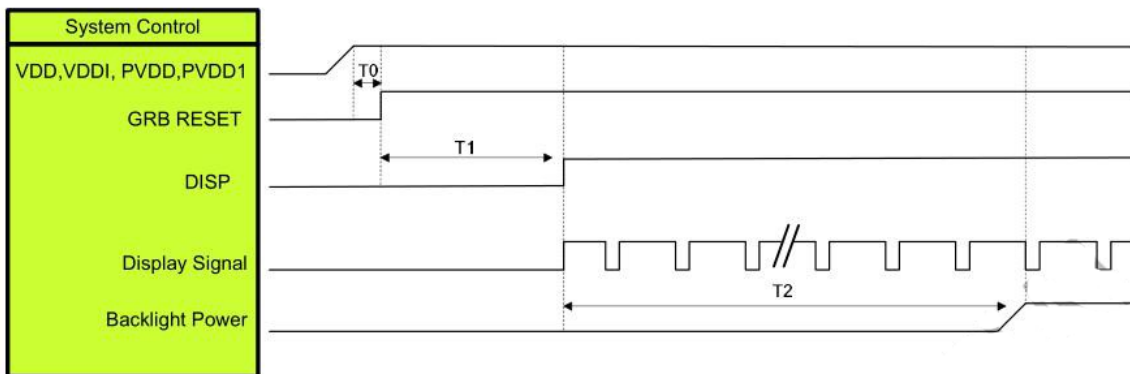
Symbol	Description	Min. Time	Unit
T0	System power stability to GRB RESET signal	0	ms
T1	GRB RESET= "High" to DISP="High"	10	ms
T2	Display Signal output to Backlight Power on	250	ms

Note: RGB interface Display signal: DCLK; VSYNC; HSYNC; DE; DR[7:0]; DG[7:0]; DB[7:0]

5.2.2 Off
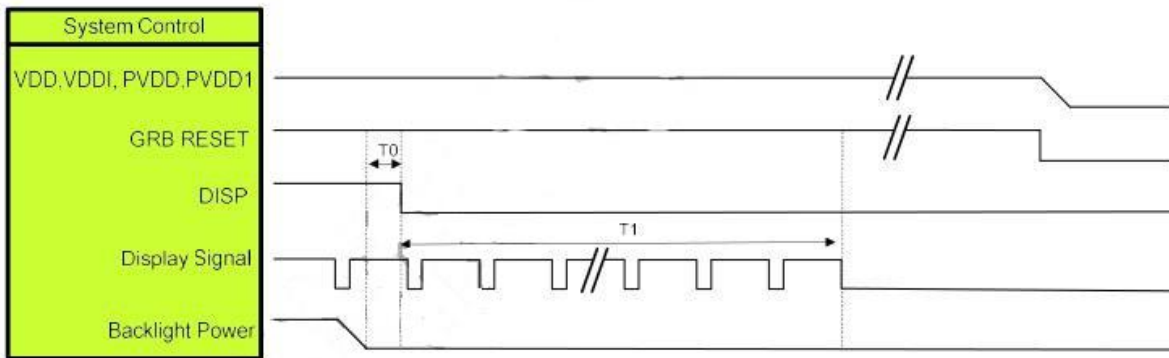
Symbol	Description	Min. Time	Unit
T0	Backlight Power off to DISP="Low"	5	ms
T1	DISP="Low" to IC internal voltage discharge complete	100	ms

Note: RGB interface Display signal: DCLK; VSYNC; HSYNC; DE; DR[7:0]; DG[7:0]; DB[7:0]

5.3 Mode DC Electrical Characteristics

Parameter	Symbol	Conditions	MIN	TYP	MAX	UNIT
Logic high level input voltage	V_{IHLPCD}	LP-CD	450	-	1350	mV
Logic low level input voltage	V_{ILLPCD}	LP-CD	0	-	200	mV
Logic high level input voltage	V_{IHLPRX}	LP-RX (CLK, D0, D1)	880	-	1350	mV
Logic low level input voltage	V_{ILLPRX}	LP-RX (CLK, D0, D1)	0	-	550	mV
Logic low level input voltage	$V_{ILLPRXULP}$	LP-RX (CLK ULP mode)	0	-	300	mV
Logic high level output voltage	V_{OHLPTX}	LP-TX (D0)	1.1	-	1.3	V
Logic low level output voltage	V_{OLLPTX}	LP-TX (D0)	-50	-	50	mV
Logic high level input current	I_{IH}	LP-CD, LP-RX	-	-	10	µA
Logic low level input current	I_{IL}	LP-CD, LP-RX	-10	-	-	µA
Input pulse rejection	SGD	DSI-CLK+/-, DSI-Dn+/- (Note 3)	-	-	300	Vps
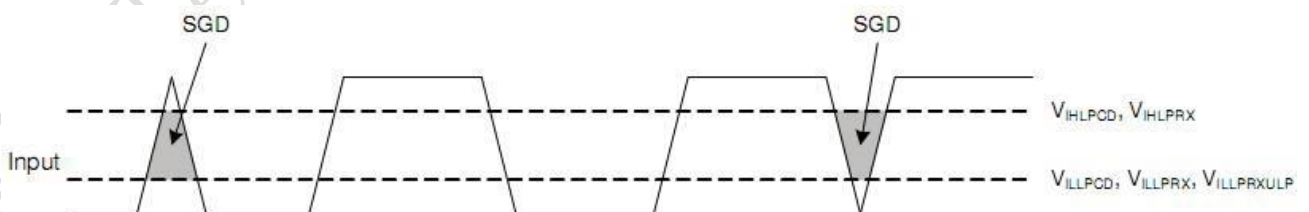
Spike/glitch rejection-DSI

5.4 AC Characteristics

(VSS=VSSI=DVSS=0V, VDDI=1.65V to 3.6V, VDD=2.5V to 3.6V,Ta = -30 to 70°C)

Signal	Symbol	Parameter	MIN	TYP	MAX	Unit	Description
DSI-CLK+/-	2xUI$_{INST}$	Double UI instantaneous	4	-	8	ns	4 Lane (Note 2)
			3	-	8	ns	3 Lane (Note 2)
			2.352	-	8	ns	2 Lane (Note 3)
DSI-CLK+/-	UI$_{INSTA}$ UI$_{INSTB}$	UI instantaneous halfs (UI = UI$_{INSTA}$ = UI$_{INSTB}$)	2	-	4	ns	4 Lane (Note 2)
			1.5	-	4	ns	3 Lane (Note 2)
			1.176	-	4	ns	2 Lane (Note 3)
DSI-Dn+/-	t$_{DS}$	Data to clock setup time	0.15xUI	-	-	ps	
DSI-Dn+/-	t$_{DH}$	Data to clock hold time	0.15xUI	-	-	ps	
DSI-CLK+/-	t$_{DRTCLK}$	Differential rise time for clock	150	-	0.3xUI	ps	
DSI-Dn+/-	t$_{DRTDATA}$	Differential rise time for data	150	-	0.3xUI	ps	
DSI-CLK+/-	t$_{DFTCLK}$	Differential fall time for clock	150	-	0.3xUI	ps	
DSI-Dn+/-	t$_{DFTDATA}$	Differential fall time for data	150	-	0.3xUI	ps	
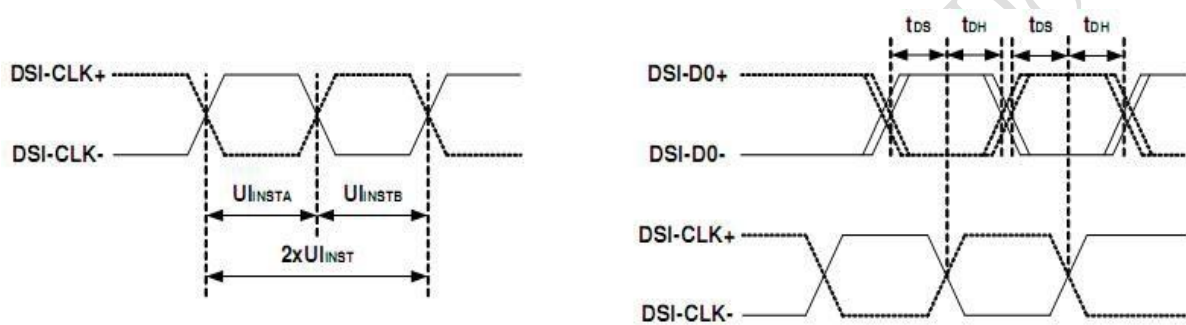
DSI clock channel timing
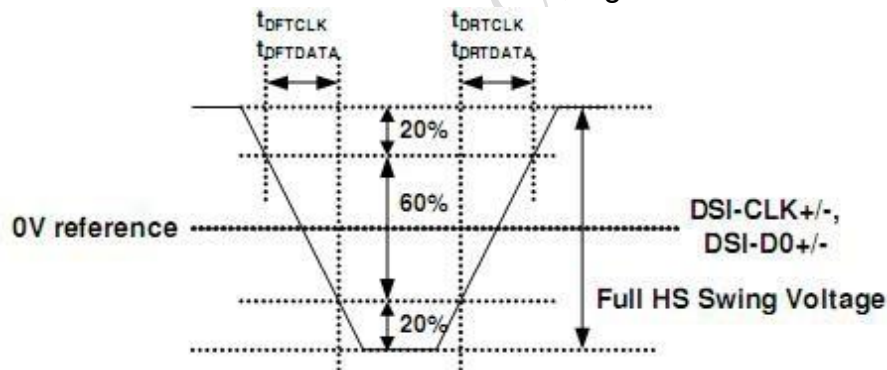
Rising and fall time on clock and data channel
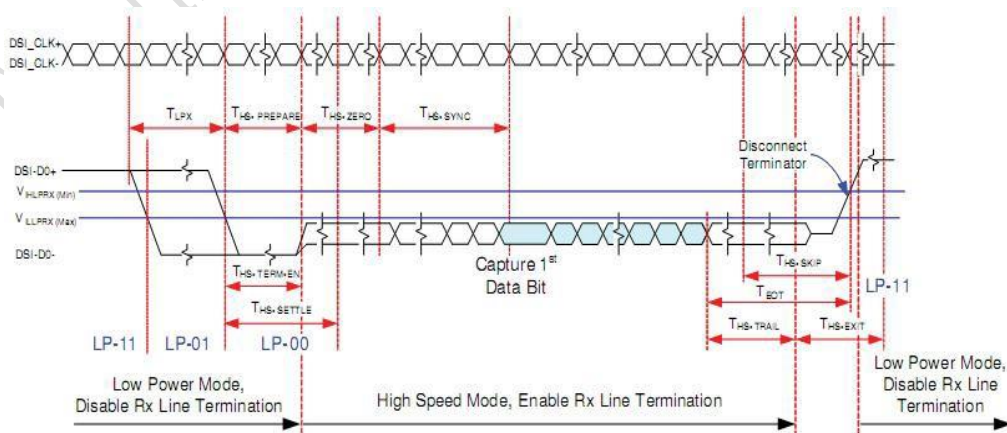
6 Optical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Angle	Top	CR≧10	70	80	-	Deg.	Note 2
	Bottom		70	80	-		
	Left		70	80	-		
	Right		70	80	-		
Contrast Ratio	CR	θ=0°	800	1000	-		
Response Time	T_r+T_f	θ=0°	-	35	50	ms	
Color Chromaticity (CIE1931)	Wx	θ=0°	0.260	0.290	0.320		Note 1
	Wy		0.290	0.320	0.350		
	Rx		-	-	-		
	Ry		-	-	-		
	Gx		-	-	-		
	Gy		-	-	-		
	Bx		-	-	-		
	By		-	-	-		
Color Gamut	NTSC	θ=0°	-	55	-	%	

Test conditions:
IF= 100 mA, and the ambient temperature is 25℃.

Note 1: Definition of optical measurement system.

The optical characteristics should be measured in dark room. After 5 minutes operation, the optical properties are measured at the center point of LCD.
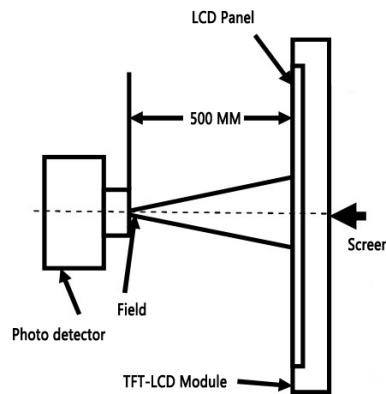
Note 2: Definition of viewing angle range and measurement system.

The viewing angle is measured at the center point of the LCD by BM-7A.
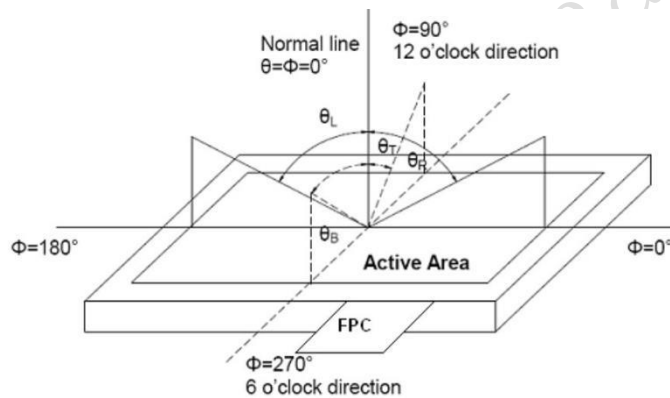
Note 3: Definition of color temperature.

When the radiation of the light source is exactly the same in the visible region and the absolute blackbody, the temperature of the blackbody is called the color temperature of the light source. Color temperature is an index to measure the degree of light source color (cold color, warm color). Warm color < 3300K, intermediate color 3300 ~ 5000K, cold color > 5000K.

Professional, Creditable, Successful

Note 4: Definition of response time.

The response time is defined as the LCD optical switching time interval between "White" state and "Black" state. Time ON (TON) is the time between photo detector output intensity changed from 90% to 10%. And time off (TOFF) is the time between photo detector output intensity changed from 10% to 90%.
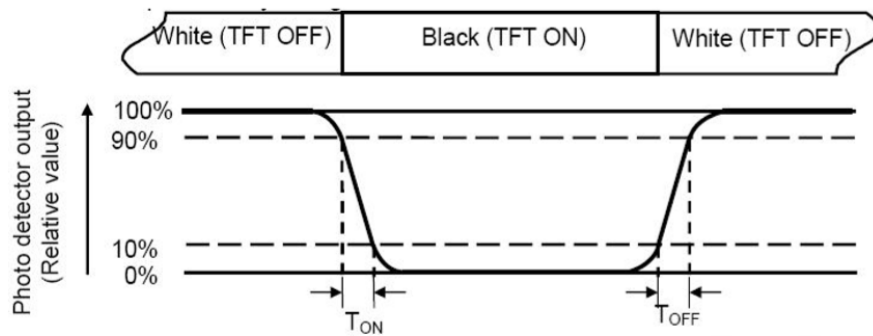
Note 5: Definition of color chromaticity (CIE1931).
Color coordinates measured at center point of LCD.

Note 6: Definition of luminance.
Measure the luminance of white state at center point.

7 Environmental Reliability Test

NO	Test Item	Condition	Remarks
1	High Temperature Operation	Ta=+60℃,96hours	IEC60068-2-1:2007 GB2423.2-2008
2	Low Temperature Operation	Ta= 0℃,96hours	IEC60068-2-1:2007 GB2423.1-2008
3	High Temperature Storage	Ta=+70℃,96hours	IEC60068-2-1:2007 GB2423.2-2008
4	Low Temperature Storage	Ta=-10℃,96hours	IEC60068-2-1:2007 GB2423.1-2008
5	Vibration Test	10Hz~45Hz,100m/s^2,120min	IEC60068-2-6:1982 GB/T 2423.10-1995
6	Package Drop Test	800mm, concrete floor,1corner, 3edges, 6 sides each time	IEC60068-2-32:1990 GB/T 2423.8-1995
7	Shock Test	Half-sine wave,300m/s^2,11ms	IEC60068-2-27:1987 GB/T 2423.5-1995
8	ESD(non-operation)	150pF,330Ω,Contact:±4KV,Air:±8KV Measure point: LCD glass and metal bezel	IEC61000-4-2:2001 GB/T 17626.2-2006

8 Packing Capacity & Dimension

Dimension	
Dimension(mm)	120.7(W)*75.8(H)*4.3(D)
Net Weight	-
Packing Capacity	

Size	LCD Size and Resolution	Layer	Quantity (Pcs)
220mm(L)x160mm(W)x47mm(H)	5.0 inch 800*480	1	1
435mm(L)x420mm(W)x290mm(H)	5.0 inch 800*480	1	120

Packing instruction：

   The LCD+TP is placed in the grid, covered with a PE static bag and compactly assembled, the upper and the lower layers of the grid are protected by buffer spaces.

The LCD covered with a PE static bag and compactly assembled

placed in the grid

The upper and the lower layers of the grid are protected by buffer spaces

Packed

9 Appearance Inspection

9.1 General rules for inspection

　　9.1.1 Anti-static wearables (anti-static wristbands, gloves) must be worn during the inspection.

　　9.1.2 Do not use bare hands to touch the position of the device, golden fingers, and the surface of the screen to prevent the sweat from human hands from causing oxidation and affecting the appearance.

　　9.1.3 It is forbidden to stack products out of specification and handle them with care to avoid damage to components.

　　9.1.4 The repaired products need to be inspected to prevent rosin and tin slag from exceeding the specifications.

　　9.1.5 When technical documents and process documents have specific requirements for products, the technical documents and process documents shall be the main requirements.

9.2 Inspection conditions

　　9.2.1 The conditions of display function check
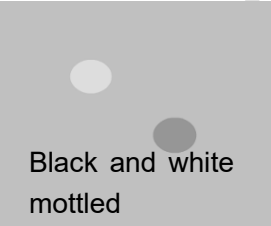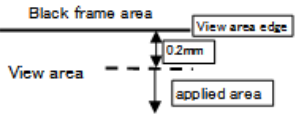
　　Angle: ±5°;

　　Inspection method: visual inspection. The inspection object is 30-40cm away from the light source, and the eye is 30-40cm away from the inspection object;
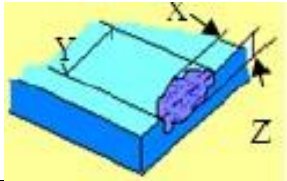
　　Illumination: 300-500Lux;

　　Inspection time: 5-10S.

　　9.2.2 Visual inspection conditions

　　Angle: ±45°;

　　Inspection method: visual inspection. The inspection object is 30-40cm away from the light source, and the eye is 30-40cm away from the inspection object;

　　Illumination: 800-1500Lux;

　　Inspection time: 5-10S.
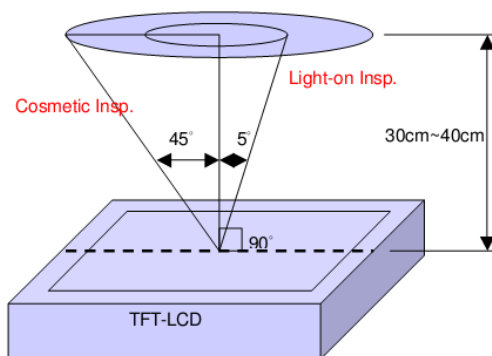
9.3 Inspection standard

Type	Test Items	Judgement Standard	Defect Category
Display state	Dead pixels	No dead pixels	
	mura	From different angles, the brightness is required to be uniform. Under the 64-level grayscale or pure black interface, there should be no uneven display brightness within the viewing angle range of 45° through 6% ND FILTER. Y series (TV film) LCD screen does not have specific requirements, and the picture inspection does not affect the display as qualified. Uneven brightness Black and white mottled	Slight defect
	Light leakage	Under the 64-level grayscale or pure black interface, there should be no obvious light leakage within the viewing angle range of 45° by visual inspection or through 6% ND FILTER. Y series (TV LCD screen) series can be without obvious visual defects.	Slight defect
	Linear foreign bodies	1. W≤0.05, L≤2mm, negligible; 2. 0.05mm＜W≤0.1mm, L≤2mm, N≤3; 3. W＞0.1mm, L＞2mm, not allowed.	Slight defect
	Bubble in OCA	1. D＜0.20mm, negligible; 2. 0.20mm＜D≤0.30mm，N≤4 and，DS＞10mm; 3. 0.30mm＜D≤0.35mm，N≤3 and，DS＞10mm; 4. 0.35mm＜D, fault. (Guarantee area: within 0.2mm outside VA) Black frame area / View area edge / 0.2mm / View area / applied area	Slight defect
Screen surface	Within the effective area	Spotted: 1. D≤0.2mm and it is not a piece, it is not counted; 2. 0.2mm＜D≤0.5mm, N≤3; 3. D>0.5mm, L>0.5mm, W>0.5mm are not allowed; (The spotted foreign objects shall not exceed the point-line gauge D=0.5, and the black dot coverage shall be checked, and the spotted foreign objects shall be judged within the range of D=0.5) Linear: 1. W≤0.05, L≤2mm, ignored; 2. 0.05＜W≤0.1mm, L≤2mm, N≤3; 3. W>0.1mm, L>2mm, not allowed.	Slight defect
	Outside the effective area Foreign objects Scratches Air bubbles	Foreign objects are not checked, and bubbles are not allowed to D>1mm; Non-inductive scratches of no more than 0.1×8mm are allowed.	Slight defect

	Crack	Not allowed.		Slight defect
	Notch	1. Does not affect the appearance from the front; 2. Does not affect the relevant alignment; 3. X≤1mm, Y≤1mm, N≤2.		Slight defect
	Glass side Foreign objects Dirty	1. The foreign body on the side is not controlled; 2. The paint pen marks on the side are not controlled; 3. Side oily note printing is not allowed.		Slight defect
FPC	Cracks Goldfinger crease	Not allowed.		Heavy deficit
	Crease	Slight creases are not controlled; The crease is whitish and has lines, which is not allowed.		Heavy deficit
	Top wound, stab wound	No damage to the line, D≤0.2mm; Damage to the line is not allowed.		Heavy deficit
	Scratch	Slight scratches on the surface are not controlled; Damage to the line is not allowed.		Heavy deficit
	Goldfinger scratch	W≤0.05mm, no control; W＞0.05mm, not allowed; Test probe tip marks are not controlled.		Heavy deficit
	Component	Under-soldering, over-soldering and false soldering are not allowed.		Heavy deficit

10 Precautions for Use of LCD Modules

10.1 Handling Precautions

　　10.1.1 The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from a high place, etc.

　　10.1.2 If the display panel is damaged and the liquid crystal substance inside it leaks out, be sure not to get any in your mouth, if the substance comes into contact with your skin or clothes, promptly wash it off using soap and water.

　　10.1.3 Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary.

　　10.1.4 The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully.

　　10.1.5 If the display surface is contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If still not completely clear, Can only use LCD dedicated cleaner, the following organic solvent can not be used:
　　　　－ Isopropyl alcohol
　　　　－ Ethyl alcohol
　　　　－ Ketone
　　　　－ Aromatic solvents

　　10.1.6 Do not attempt to disassemble the LCD Module.

　　10.1.7 If the logic circuit power is off, do not apply the input signals.

　　10.1.8 To prevent destruction of the elements by static electricity, be careful to maintain an

　　10.1.9 optimum work environment.

　　　　10.1.9.1 Be sure to ground the body when handling the LCD Modules.

　　　　10.1.9.2 Tools required for assembly, such as soldering irons, must be properly ground.

　　　　10.1.9.3 To reduce the amount of static electricity generated, do not conduct assembly and other work under dry conditions.

　　　　10.1.9.4 The LCD Module is coated with a film to protect the display surface. Be care when peeling off this protective film since static electricity may be generated.

10.2 Storage precautions

　　10.2.1 When storing the LCD modules, avoid exposure to direct sunlight or to the light of fluorescent lamps.

　　10.2.2 The LCD modules should be stored under the storage temperature range. If the LCD modules will be stored for a long time, the recommend condition is:
Temperature: 0℃ ~ 40℃ Relatively humidity: ≤80%.

　　10.2.3 The LCD modules should be stored in the room without acid, alkali and harmful gas.

10.3 Transportation Precautions

　　10.3.1 The LCD modules should be no falling and violent shocking during transportation, and also should avoid excessive press, water, damp and sunshine.

11 Laminated Screen Introduction

11.1 Laminated screen classification

The laminated screen is mainly composed of cover glass, TP and LCD. The lamination methods can be either frame lamination or full lamination. The frame lamination process fixes TP with the four sides of LCD by 3M adhesive, which is one of the most common lamination methods. Full lamination is to seamlessly bond LCD and TP by optical adhesive. Compared to frame lamination, full lamination features by moisture-proof, dust-proof, high stability, high quality display, and can achieve the visible display under strong light.

11.2 ODM service

DWIN technology has built the Huan DWIN Science Park with a construction area of 250000 square meters (In addition, another 148000 square meters are under construction), integrating industrial chain of LCM, SMT, CTP, RTP, mold injection, and Sheet metal punching. DWIN can guarantee the production of LCM, CTP and RTP with first-class technology, highly automated and intelligent manufacturing equipment.

The production capacity of LCM lines is 2.5 million. The LCM lines support the production of LCM with high luminance(1200 nit), wide operating temperature(-40~85℃), anti-electromagnetic interference, sunlight readability and HDMI interface .

The production capacity of RTP lines is 5 hundred thousand. The RTP lines support the production of customized 4-wire RTP and 5-wire RTP, anti-UV material and AG material.

The production capacity of CTP lines is 1 million. The CTP lines support the production of customized CTP, including 1.3~21.5 inches (unconventional size), circular CTP, the shape, color and logo of cover plate, anti-UV, anti- fingerprint and AG material. They can also support the customization of various kinds of technologies, such as OCA lamination, ultrathin GFF, optical bonding, 2.5D and sunlight readability.

SMT lines

CTP lines

LCM lines

RTP lines

Final inspection lines

IQC lines

Laboratories

Record of Revision

Rev	Date	Description	Editor
00	2022-12-13	First Release	Chen
01	2023-01-11	Revise Model No. Update Operating Temp and Storage Temp	Chen
02	2023-06-05	Update Luminance	Chen

Please contact us if you have any questions about the use of this document or our products, or if you would like to know the latest information about our products:

Customer service tel: +86 400 018 9008

Customer service email: dwinhmi@dwin.com.cn

DWIN developer forum: https://forums.dwin-global.com/index.php/forums/

Thank you all for continuous support of DWIN, and your approval is the driving force of our progress!