LN80480T070ID4598

7.0 inch, 800*480 pixels resolution, RGB interface, TN-TFT-LCD

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

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1 General Feature

Feature		Description	Unit
Display Spec.	Size	7.0	inch
	Resolution	800(H)*480(V)	pixels
	Pixel Configuration	RGB stripe	-
	Pixel Pitch	0.0642(W)*0.1790(H)	mm
	Viewing Direction	6 o'clock	-
Mechanical Characteristics	Outside Dimension	165.0(W)*100.0(H)*5.7(D)	mm
	Active Area	154.08(W)*85.92(H)	mm
	Luminance	450	cd/m²
	LED Numbers	27 LEDS	-
	Pin Order	From left to right 50Pin_0.5mm	-
	Weight	-	g
Electrical Characteristics	Interface	RGB_24bit	-
	Color Depth	16.7M	colors
	Driver Condition	3.3(Type)	V
	Driver IC	EK9713CA+EK73002AB2/ILI6122+ILI5960	-
Temperature Range	Operating Temp.	-20~70	℃
	Storage Temp.	-30~80	℃

Note：Requirements on Environmental Protection: RoHS

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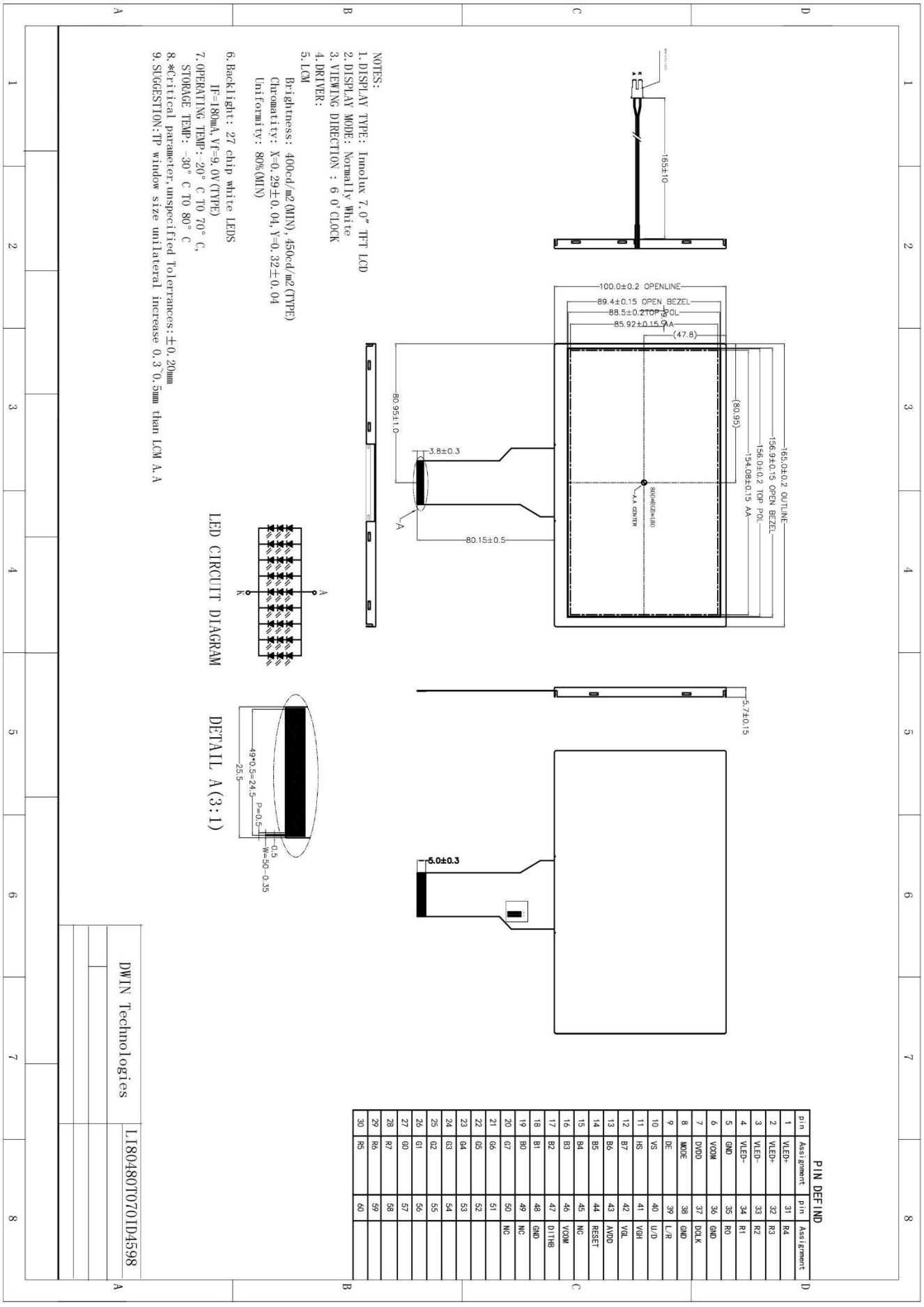
2 Mechanical Drawing



PIN DEFIND

pin	Assignment	pin	Assignment	pin	Assignment	pin	Assignment
1	VLED+	31	R4	2	VLED+	32	R3
3	VLED-	33	R2	4	VLED-	34	R1
5	GND	35	R0	6	VCOM	36	GND
7	DVDD	37	DCLK	8	MODE	38	GND
9	DE	39	L/R	10	VS	40	U/D
11	HS	41	VGH	12	B7	42	VGL
13	B6	43	AVDD	14	B5	44	RESET
15	B4	45	NC	16	B3	46	VCOM
17	B2	47	DITHB	18	B1	48	GND
19	B0	49	NC	20	G7	50	NC
21	G6	51		22	G5	52	
23	G4	53		24	G3	54	
25	G2	55		26	G1	56	
27	G0	57		28	R7	58	
29	R6	59		30	R5	60	

3 Input/Output Terminals

Pin NO.	Symbol	Function	Remark
1	VLED+	Power for LED Backlight (anode)	
2	VLED+	Power for LED Backlight (anode)	
3	VLED-	Power for LED Backlight (cathode)	
4	VLED-	Power for LED Backlight (cathode)	
5	GND	Power ground	
6	VCOM	Common voltage	
7	DVDD	Digital Power	
8	MODE	DE/SYNC mode select	MODE=1, DE mode, VS and HS must pull high; MODE=0, HSD/VSD mode, DE must be grounded
9	DE	Data input enable	
10	VS	Vertical Sync Input	
11	HS	Horizontal Sync Input	
12	B7	Blue data(MSB)	
13	B6	Blue data	
14	B5	Blue data	
15	B4	Blue data	
16	B3	Blue data	
17	B2	Blue data	
18	B1	Blue data	When input 18 bits RGB data,
19	B0	Blue data (LSB)	When input 18 bits RGB data,
20	G7	Green data(MSB)	
21	G6	Green data	
22	G5	Green data	
23	G4	Green data	
24	G3	Green data	
25	G2	Green data	
26	G1	Green data	When input 18 bits RGB data, G1 must be grounded
27	G0	Green data(LSB)	When input 18 bits RGB data, G0 must be grounded
28	R7	RED data(MSB)	
29	R6	RED data	
30	R5	RED data	
31	R4	RED data	
32	R3	RED data	
33	R2	RED data	
34	R1	RED data	When input 18 bits RGB data, R1 must be grounded

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35	R0	RED data(LSB)	When input 18 bits RGB data, R0 must be grounded
36	GND	Power ground	
37	DCLK	Sample clock	Data shall be latched at the falling edge of DCLK
38	GND	Power ground	
39	L/R	Left/right selection	Selection of scanning mode
40	U/D	Up/down selection	Selection of scanning mode
41	VGH	Gate on voltage	
42	VGL	Gate off voltage	
43	AVDD	Analog Power	
44	RESET	Global reset pin	Active low to enter reset state, suggest to connect with an RC reset circuit for stability. Normally pull high
45	NC	No connection	
46	VCOM	Common voltage	
47	DITHB	Dithering function enable control, normally pull high	When DITHB=1, disable Internal dithering function; When DITHB=0, enable Internal dithering function
48	GND	Power ground	
49	NC	No connection	
50	NC	No connection	

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4 Electrical Characteristics

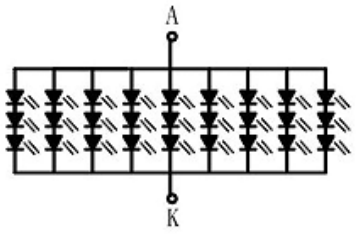
4.1 Driving TFT LCD Panel

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Digital Power Voltage	VCC	3.0	3.3	3.6	V	
Analog Power Voltage	AVDD	10.2	10.4	10.6	V	
Gate on Voltage	VGH	15.3	16	16.7	V	
Gate off Voltage	VGL	-7.7	-7.0	-6.3	V	
Input Signal Voltage	VCOM	2.6	(3.6)	4.6	V	
Input Signal Voltage	V_{IL}	0	-	0.3DVDD	V	
	V_{IH}	0.7DVDD	-	DVDD		
Current of Digital Supply Voltage	I_{DVDD}	-	4.0	10	mA	DVDD=3.3V
Current of Analog Supply Voltage	I_{AVDD}	-	20	50	mA	AVDD=10.4V
Current of Gate on Voltage	I_{VGH}	-	0.2	1.0	mA	VGH=16.0V
Current of Gate off Voltage	I_{VGL}	-	0.2	1.0	mA	VGH=-7.0V

4.2 LED Backlight Specification

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Forward Current	I_F	170	180	200	mA	
Forward Voltage	V_F	8.4	9.3	10.2	V	
Luminance	Lv	-	450	-	cd/m²	
LED Life-Time	L_{BL}	20000	-	-	Hour	

Note: 27 LEDs (3LEDs Serial, 9ways Parallel)



LED CIRCUIT DIAGRAM

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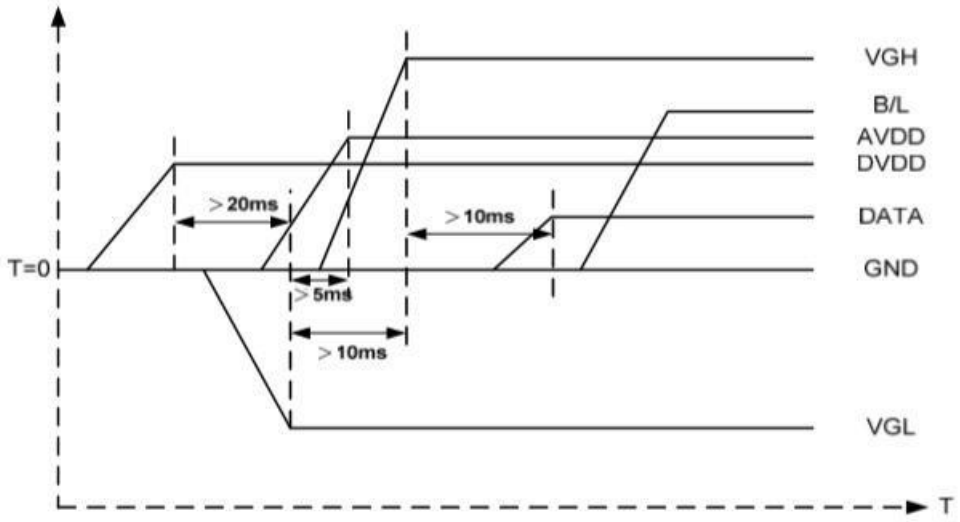
5 Timing Characteristics

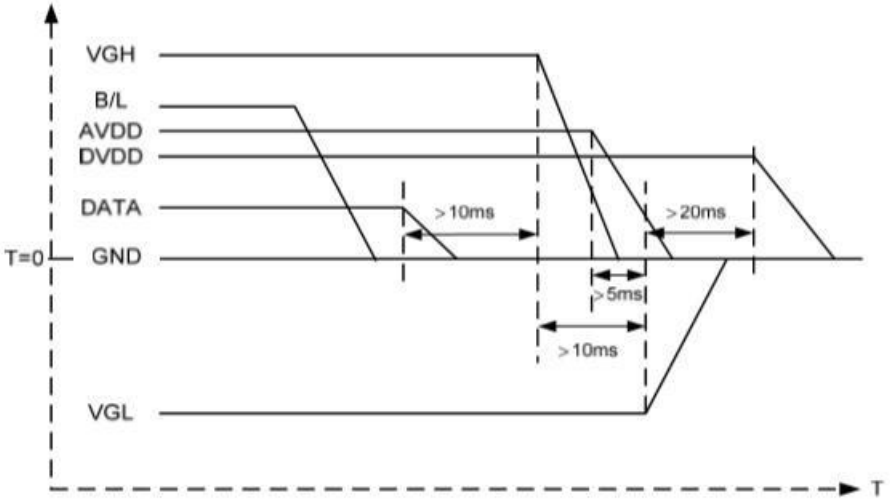
5.1 Power On/Off Sequence

a. Power on:



DV_{DD}→VGL→VGH→Data→B/L

b. Power off:



B/L→Data→VGH→VGL→DV_{DD}

Note: Data include R0~R7, B0~B7, GO~G7, U/D, L/R, DCLK, HS,VS,DE.

5.2 AC Electrical Characteristics

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
HS setup time	T_{hst}	8	-	-	ns	
HS hold time	T_{hhd}	8	-	-	ns	
VS setup time	T_{vst}	8	-	-	ns	
VS hold time	T_{vhd}	8	-	-	ns	
Data setup time	T_{dsu}	8	-	-	ns	
Data hole time	T_{dhd}	8	-	-	ns	
DE setup time	T_{esu}	8	-	-	ns	
DE hole time	T_{ehd}	8	-	-	ns	
DV_{DD} Power On Slew rate	T_{POR}	-	-	20	ms	From 0 to 90% DV_{DD}
RESET pulse width	T_{Rst}	1	-	-	ms	
DCLK cycle time	T_{coh}	20	-	-	ns	
DCLK pulse duty	T_{cwh}	40	50	60	%	

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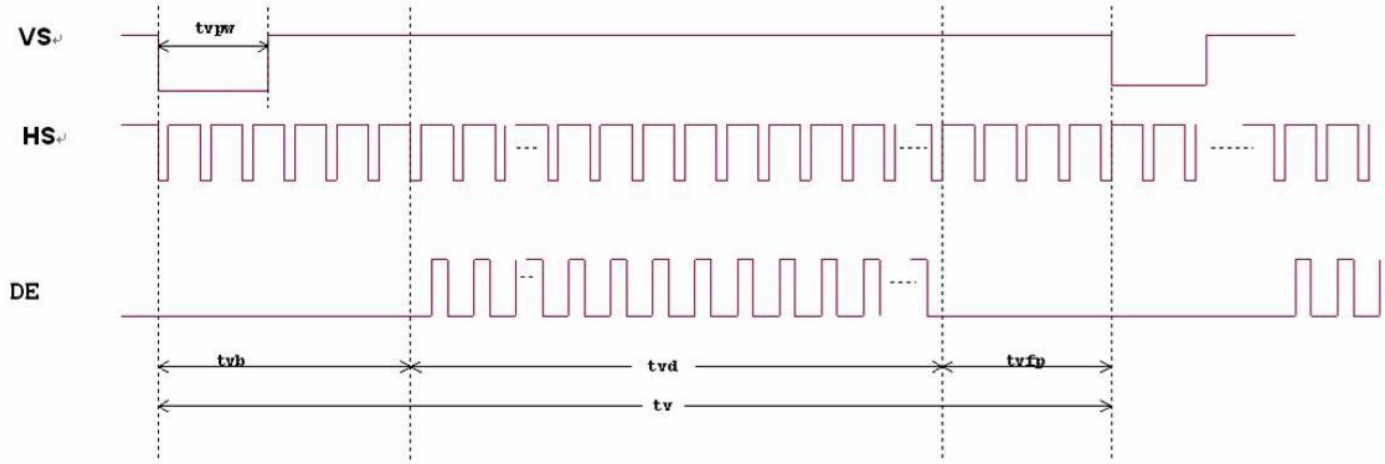
5.3 Data Input Format

5.3.1 Horizontal

5.3.2 Vertical



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Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Horizontal Display Area	thd	-	800	-	DCLK	
DCLK Frequency	fclk	26.4	33.3	46.8	MHz	
One Horizontal Line	th	862	1056	1200	DCLK	
HS pulse width	thpw	1	-	40	DCLK	
HS Blanking	thb	46	46	46	DCLK	
HS Front Porch	thfp	16	210	354	DCLK	

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Vertical Display Area	tvd	-	480	-	TH	
VS period time	tv	510	525	650	TH	
VS pulse width	tvpw	1	-	20	TH	
VS Blanking	tvb	23	23	23	TH	
VS Front Porch	tvfp	7	22	147	TH	

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6 Optical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Angle	Top	CR≧10	40	50	-	Deg.	Note 2,3
	Bottom		60	70	-		
	Left		60	70	-		
	Right		60	70	-		
Contrast Ratio	CR	θ=0°	400	500	-		Note 3
Response Time	T_{ON}	25℃.	-	10	20	ms	Note 4
	T_{OFF}			15	30	ms	
Color Chromaticity (CIE1931)	Wx	θ=0°	0.26	0.31	0.36		Note 1,5
	Wy		0.28	0.33	0.38		
Uniformity	YU		70	75	-	%	Note 6
Luminance	L		400	450	-	cd/m²	Note 7

Test conditions:
IF= 180 mA, and the ambient temperature is 25℃.

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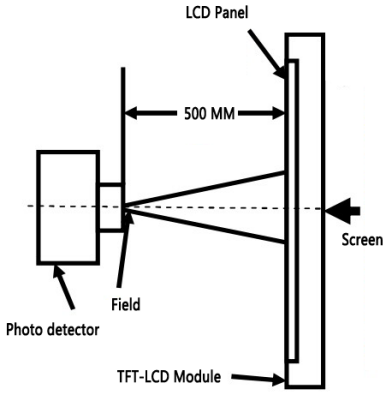
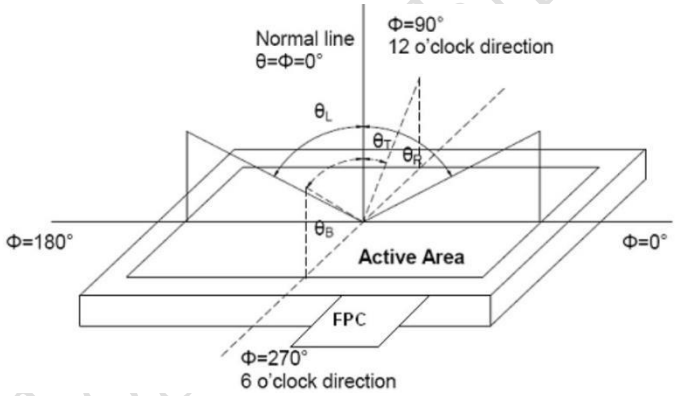
Note 1: Definition of optical measurement system.
The optical characteristics should be measured in dark room. After 5 minutes operation, the optical properties are measured at the center point of LCD.



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: 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.

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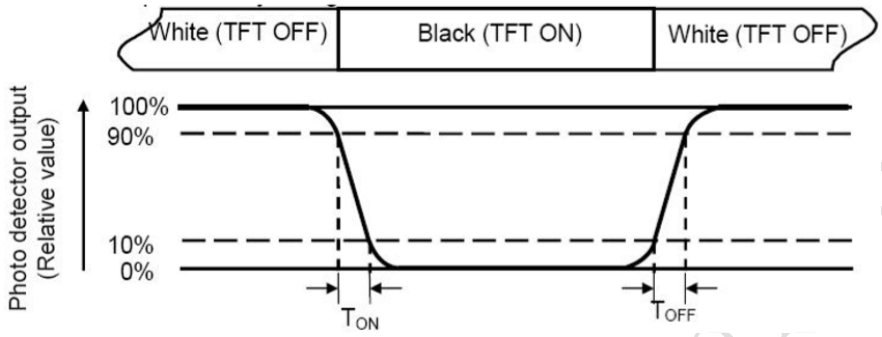
Note 4: Definition of response time.

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).

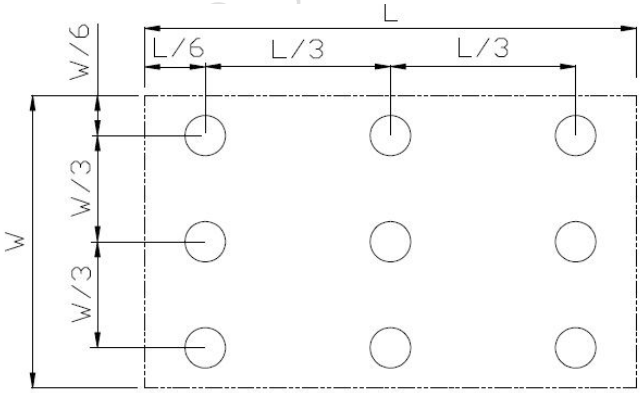
Color coordinates measured at center point of LCD.

Note 6: Definition of luminance uniformity.

Active area is divided into 9 measuring areas (Refer Fig. 2). Every measuring point is placed at the center of each measuring area.

Luminance Uniformity (U) = Lmin/ Lmax.

L------Active area length; W----- Active area width.



Lmax: The measured Maximum luminance of all measurement position.

Lmin: The measured Minimum luminance of all measurement position.

Note 7: Definition of luminance.

Measure the luminance of white state at center point.

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7 Environmental Reliability Test

NO	Test Item	Condition	Remarks
1	High Temperature Operation	Ta=+70℃, 240hours	IEC60068-2-1:2007 GB2423.2-2008
2	Low Temperature Operation	Ta=-20℃,240hours	IEC60068-2-1:2007 GB2423.1-2008
3	High Temperature Storage	Ta=+80℃, 240hours	IEC60068-2-1:2007 GB2423.2-2008
4	Low Temperature Storage	Ta=-30℃, 240hours	IEC60068-2-1:2007 GB2423.1-2008
5	Storage at High Temperature and Humidity	Ta=+60℃, 90% RH,240hours	IEC60068-2-78 :2001 GB/T2423.3-2006
6	Thermal Shock (non-operation)	-30℃ 30 min~+80℃ 30 min, Change time: 5min, 20 Cycle	Start with cold temperature, End with high temperature, IEC60068-2-14:1984, GB 2423.22-2002
7	ESD(non-operation)	±2KV,Human Body Mode, 100pF/1500Ω	IEC61000-4-2:2001 GB/T 17626.2-2006
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/T 2423.10-1995
9	Mechanical Shock (non-operation)	100G 6ms, ±X, ±Y, ±Z 3times for each direction	IEC60068-2-27:1987 GB/T 2423.5-1995
10	Package Drop Test	Height: 60cm,1corner,3 edges,6 surfaces	IEC60068-2-32:1990 GB/T 2423.8-1995

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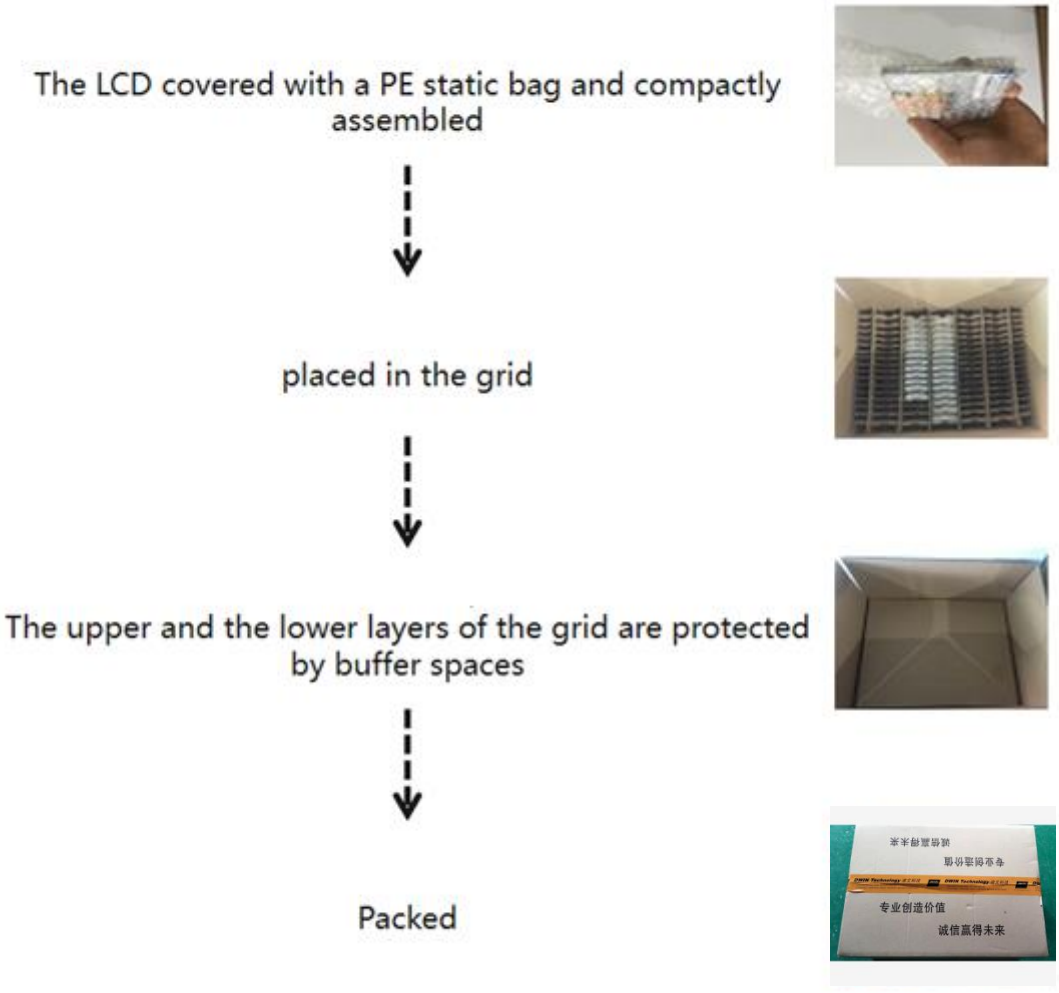
8 Packing Capacity & Dimension

Dimension			
Dimension(mm)	165.0(W)*100.0(H)*5.7(D)		
Net Weight	-		
Packing Capacity			
Size	**LCD Size and Resolution**	**Layer**	**Quantity (Pcs)**
250mm(L)x200mm(W)x80mm(H)	7.0 inch 800*480	1	1
600mm(L)x450mm(W)x300mm(H)	7.0 inch 800*480	1	80

Packing instruction：
The LCD 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.



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.

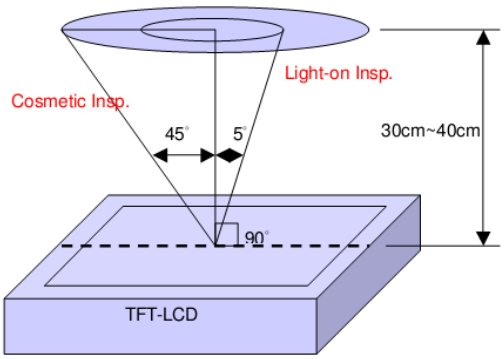
9.2.2 Visual inspection conditions

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.



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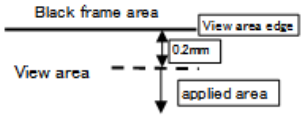
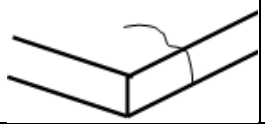
9.3 Inspection standards

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. 	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) 	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)	Slight defect
		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.	
	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

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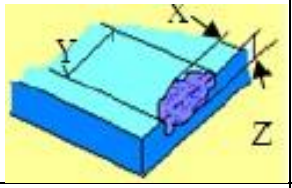
	Notch	1. Does not affect the appearance from the front; 2. Does not affect the relevant alignment; 3. X≤1mm, Y≤1mm, N≤2. 	Slight defect
	Glass side Foreign objects Dirty	1. The foreign body on the side is not controlled; 2. The paint pen marks on the side are not controlled; 3. Side oily note printing 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

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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.

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11 LCD Introduction

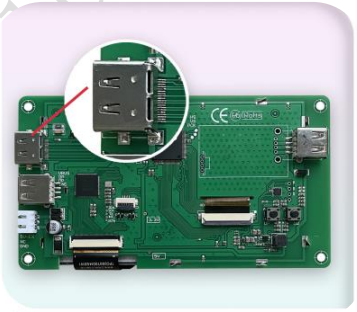
11.1 Process capacity

DWIN adopts original class A glass and the entire production is in the park from cleaning, cutting, bonding, and laminating of large glass to backlight assembly, quality inspection, and aging. There are 12,000 square meters of clean workshop, with a monthly production capacity of about 2.5 million pieces. Each piece of LCD produced in the factory is for 30 days of aging.

11.2 ODM service

Based on LCD products of 1.5~21.5 inches, DWIN provides the following customization services.

1、LCD HDMI interface customization.



HDMI interface

2、Special screen customization such as high brightness, ultra-wide temperature and strong electromagnetic protection.

High brightness
(up to 1200nit)

Ultra-wide temperature
(-40~85℃)

Strong electromagnetic
protection

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3、Lamination customization service of LCD + TP.

LCM+RTP

LCM+CTP

4、Customization service of DWIN self-developed T5L ASIC+ LCD + TP.

T5L ASIC

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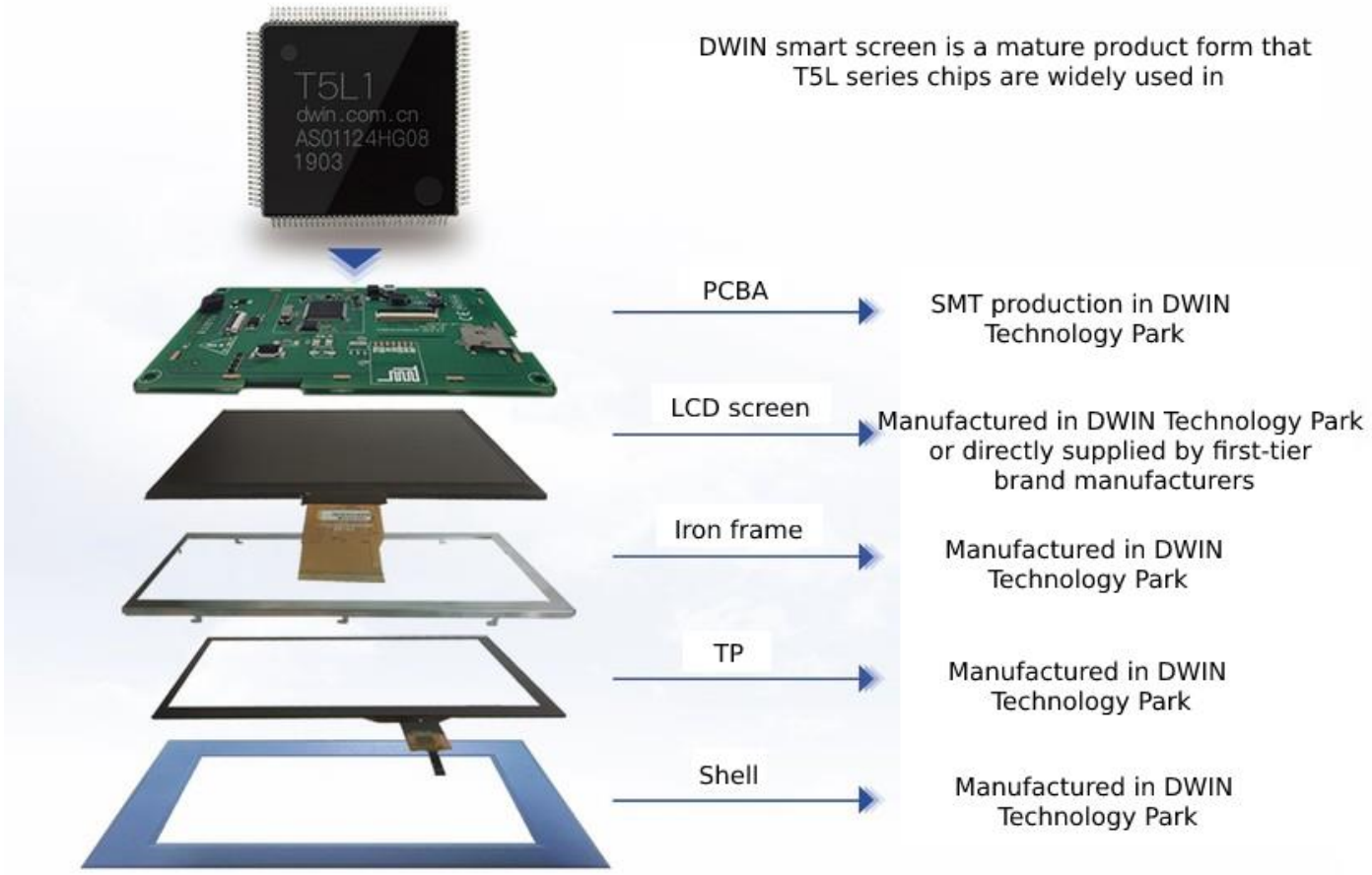
5、Smart screen finished product customization.



Please contact our sales staff for other customization needs.

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Record of Revision

Rev	Date	Description	Editor
00	2021-03-15	First Release	Zhou Biao
01	2022-12-15	Add Product Picture, Update Operating/Storage Temperature and Add Driver IC	Chen Xian
02	2023-02-22	Update Packing Capacity	Chen Xian

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:

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

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