



深圳市思迪科科技有限公司

SHENZHEN CDTECH ELECTRONICS

Product Specifications

Model Name	S088HWU03HP-DC26
Description	480(RGB)x1920 Dots 8.8" TFT LCD
Date	2022/05/18
Revision	1.0

Approved by/Date	Check by/Date	Prepared by/Date
ZHP 2022/05/18	HL 2022/05/18	ZWF 2022/05/18

Customer Approval	
Date	



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1. Record of Revision

Rev	Issued Date	Description	Editor
1.0	2022/05/18	First Release.	ZWF

2 General Specifications

Feature		Spec
Characteristics	Size	8.8 inch
	Resolution	480(horizontal)*1920(Vertical)
	Interface	MIPI
	Connect type	Connector
	Color Depth	16.7M
	Technology type	a-Si
	Display Spec. Pixel pitch (mm)	0.114*0.114
	Pixel Configuration	R.G.B.-Vertical Stripe
	Display Mode	Normally Black
	CTP Driver IC	HY4635-N068
	Viewing Direction	ALL
Mechanical	LCM (W x H x D) (mm)	231.16X64.06*6.60
	Active Area(mm)	218.88X54.72
	With /Without TSP	With CTP
	Weight (g)	TBD

Note 1: Viewing direction is follow the data which measured by optics equipment.

Note 2: Requirements on Environmental Protection: RoHS.

Note 3: LCM weight tolerance: +/- 5%.

3. Input/OutputTerminals

Pin No.	Signal	Description	Note
1	GND	Ground.	
2	NC	No connection.	
3-4	LED+	LED Anode.	
5	NC	No connection.	
6-7	LED-	LED Cathode.	
8	NC	No connection.	
9	GNG	Ground.	
10	NC	No connection.	
11	AVDD	Power for Analog Circuit	
12	NC	No connection.	
13	VGH	Gate ON Voltage.	
14	NC	No connection.	
15	VGL	Gate OFF Voltage	
16	NC	No connection.	
17	GND	Ground	
18	VCOM	Common Voltage.	
19-20	GND	Ground.	
21	RESET	Global reset pin	
22	VDD	Power supply	
23	STBYB	Stand.	
24	TP SYNC	Sync signal for touch panel.	
25	GND	Ground.	
26	D0P	MIPI Data Input Lane0 positive-end.	
27	D0N	MIPI Data Input Lane0 negative-end.	
28	GND	Ground.	
29	D1P	MIPI Data Input Lane1 positive-end.	
30	D1N	MIPI Data Input Lane1 negative-end.	
31	GND	Ground.	
32	CLKP	MIPI Clock Input positive-end.	
33	CLKN	MIPI Clock Input negative-end.	
34	GND	Ground.	
35	D2P	MIPI Data Input Lane2 positive-end.	
36	D2N	MIPI Data Input Lane2 negative-end.	
37	GND	Ground.	
38	D3P	MIPI Data Input Lane3 positive-end.	
39	D3N	MIPI Data Input Lane3 negative-end.	
40	GND	Ground.	

CTP interface description

Pin No.	Signal	Description	Note
1	RST	Reset Pin for CTP	
2	VCC	Power supply for CTP	
3	GND	Ground	
4	INT	Interrupt request to the host	
5	SDA	I2C data input and output	
6	SCL	I2C clock input	

4. Absolute Maximum Ratings

Item	Symbol	MIN	Typ	MAX	Unit	Remark
Supply Voltage	VDD	-0.5	-	4	V	-
Operating Temperature	TOPR	-20	-	70	°C	-
Storage Temperature	TSTG	-30	-	80	°C	-

5 Electrical Characteristics

5.1 TFT-LCD Typical Operation Conditions

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Supply Voltage	VDD	3.0	3.3	3.6	V	
	VGH	17.0	18.0	19.0	V	
	VGL	-11	-10	-9	V	
	AVDD	11.8	12	12.2	V	
VCOM	VCOM	3.66	4.16	4.66	V	Note (1)
Input signal voltage	ViH	0.7 VDD	-	VDD	V	Note (2)
	ViL	0	-	0.3 VDD	V	
Current of power supply	IDD	-	35	-	mA	VDD = 3.3V
	IADD	-	30	-	mA	AVDD=12V
	IGH	-	5	-	mA	VGH=18V
	IGL	-	-5	-	mA	VGL= -10V
	Ivcom	-	0.1	--	mA	Vcom= 4.16 V

Note (1): Please adjust VCOM to make the flicker level minimum.

Note (2) :RESET 、STBYB

5.2 LED Driving Conditions

Item	Symbol	MIN	TYP	MAX	Unit	Remark
Forward Current	I _F	-	160	-	mA	
Forward Voltage	V _F	13.5	-	17	V	
Backlight Power consumption	W _{BL}	2.16	-	2.72	W	
LED Lifetime		30000	-	-	Hrs	

Note 1: Each LED: I_F =20 mA, V_F =2.7~3.4V.

Note 2: Optical performance should be evaluated at Ta=25℃ only.

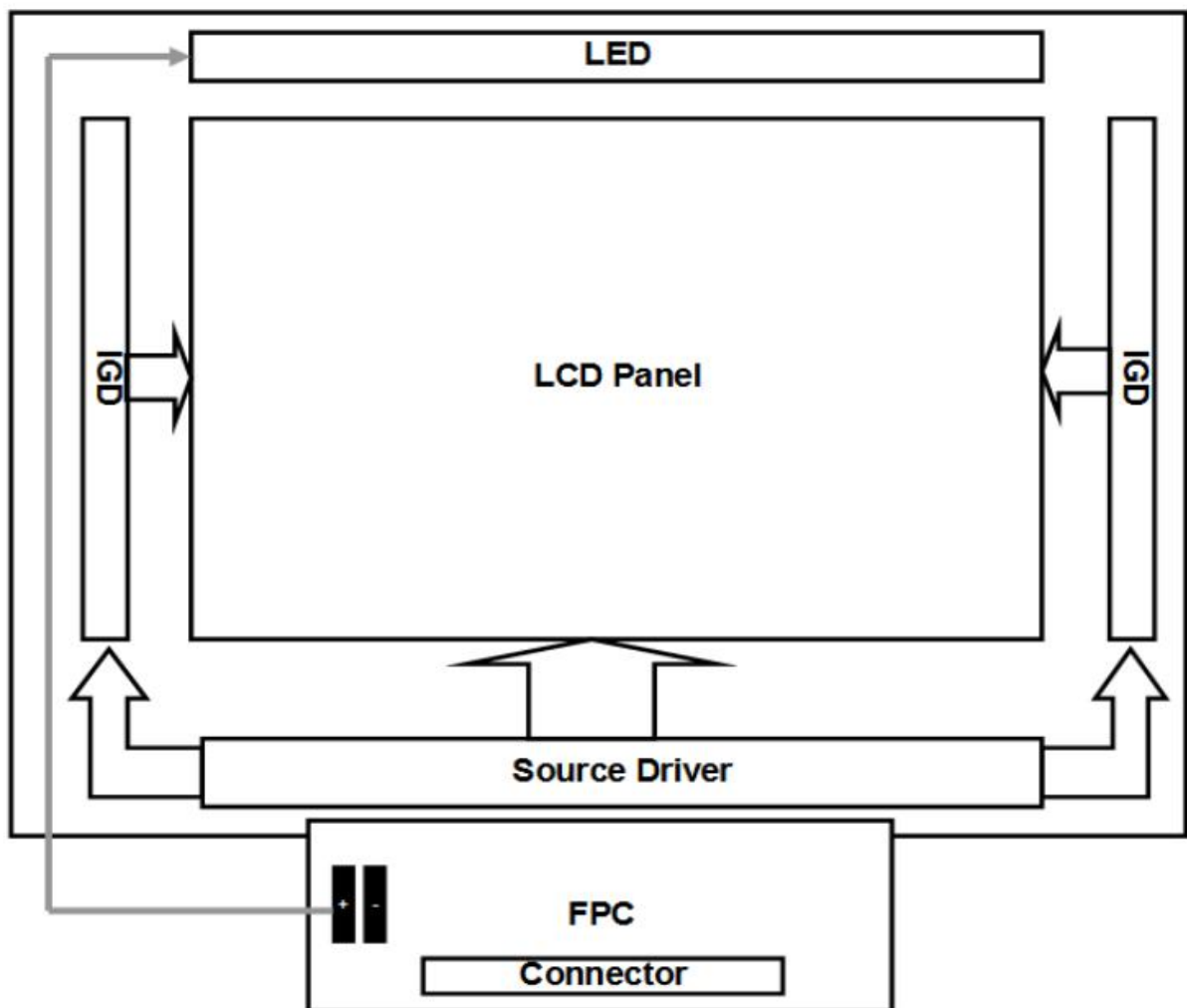
Note 3: If LED is driven by high current, high ambient temperature & humidity condition. The life Time of LED will be reduced. Operating life means brightness goes down to 50% initial brightness. Typical operating life time is estimated data.

5.3 CTP Electrical Characteristics

FPC Design	Item	Description	Remark
COF	IC solution on TP Model	HY4635-N068	
	Touch Count Max	5point	
	Interface Type	I2C	
	I2C Slave Address	0X70	
	Origin of Coordinate	Top left corner	

Parameter	Symbol	Min	Typ	Max	Unit
Power Voltage	VCC	2.8	3.3	3.6	V

5.4 BLOCK DIAGRAM

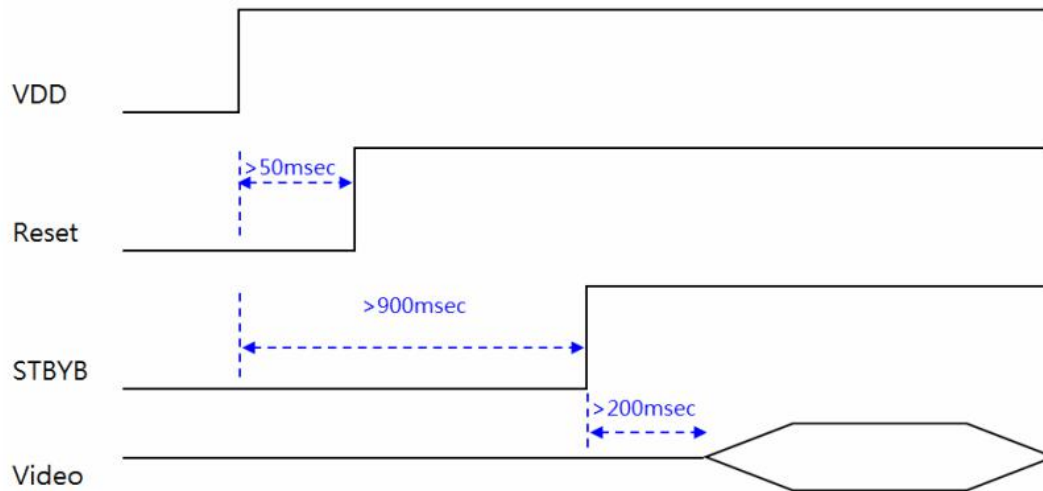


6.Interface Timing

6.1Timing

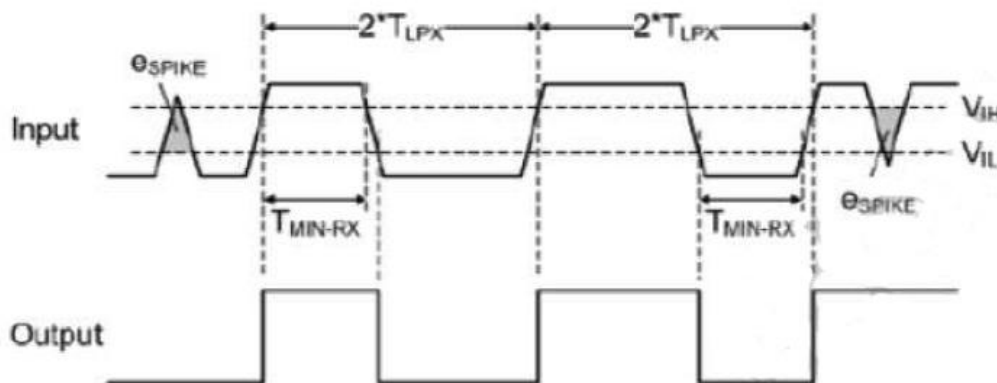
Item	Symbol	Min.	Typ.	Max.	Unit
MIPI Video data rate(4 lane)	-	-	397.7	-	Mbps
PCLK Frequency	FPCLK	-	66.3	-	MHz
Horizontal Synchronization	Hsync	-	30	-	PCLK
Horizontal Back Porch	HBP	-	30	-	PCLK
Horizontal Front Porch	HFP	-	30	-	PCLK
Hsync+HBP+HFP	-	75	90	-	PCLK
HorizontalAddress(Display Area)	Hadr	-	480	-	PCLK
Horizontal cycle	-	555	570	-	PCLK
Vertical Synchronization	Vsync	-	6	-	Line
Vertical Back Porch	VBP	-	6	-	Line
Vertical Front Porch	VFP	-	6	-	Line
Vsync+VBP+VFP	-	15	18	-	Line
Vertical Address(Display Area)	Vadr	-	1920	-	Line
Vertical cycle	-	1935	1938	-	Line
Frame Rate	-	-	60	-	Hz

6.2 Power On / Off Sequence



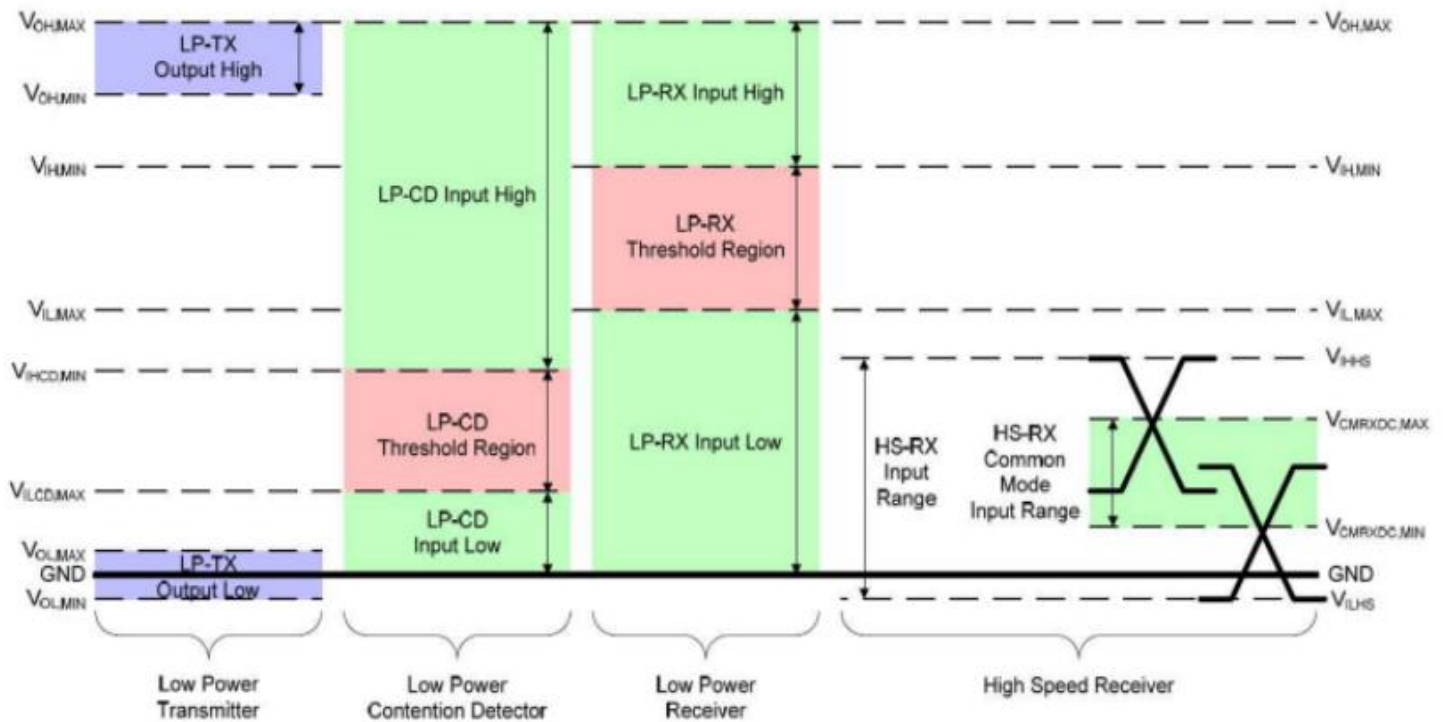
6.3 LP Receiver DC Specification

		Rating				
Parameter	Symbol	Rating			Unit	Note
		Min	Typ	Max		
Logic 1 input voltage	V _{IH}	880	-	-	mV	
Logic 0 input voltage, not in ULP State	V _{IL}	-	-	550	mV	
Input hysteresis	V _{HYST}	25	-	-	mV	



6.4 Line Contention Detection

Parameter	Symbol	Min	Rating Typ	Max	Unit	Note
Logic 1 contention threshold	VIHCD	450	-	-	mV	
Logic 0 contention threshold	VILCD	-	-	200	mV	



7 Optical Characteristics

Items		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing angles		θ_T	Center CR≥10	75	85	-	Degree.	Note1
		θ_B		75	85	-		
		θ_L		75	85	-		
		θ_R		75	85	-		
Contrast Ratio		CR	$\Theta =0$	600	800	-	-	Note4,
Response Time		T _{on+off}	25°C	-	30	40	ms	Note2 Note3
Chromaticity	Red	R _X	$\theta=0^\circ$ $\varnothing=0^\circ$ Ta=25°	0.576	0.626	0.676		Note5
		R _Y		0.295	0.345	0.395		
	Green	G _X		0.262	0.312	0.362		
		G _Y		0.493	0.543	0.593		
	Blue	B _X		0.097	0.147	0.193		
		B _Y		0.059	0.109	0.159		
	White	X _W		0.250	0.300	0.350	-	
		Y _W		0.272	0.322	0.372	-	
Uniformity		U	-	70	80	-	%	Note1 Note6
Luminance		L	-	400	500	-	nits	Note1, Note7

Note 1: Definition of viewing angle range

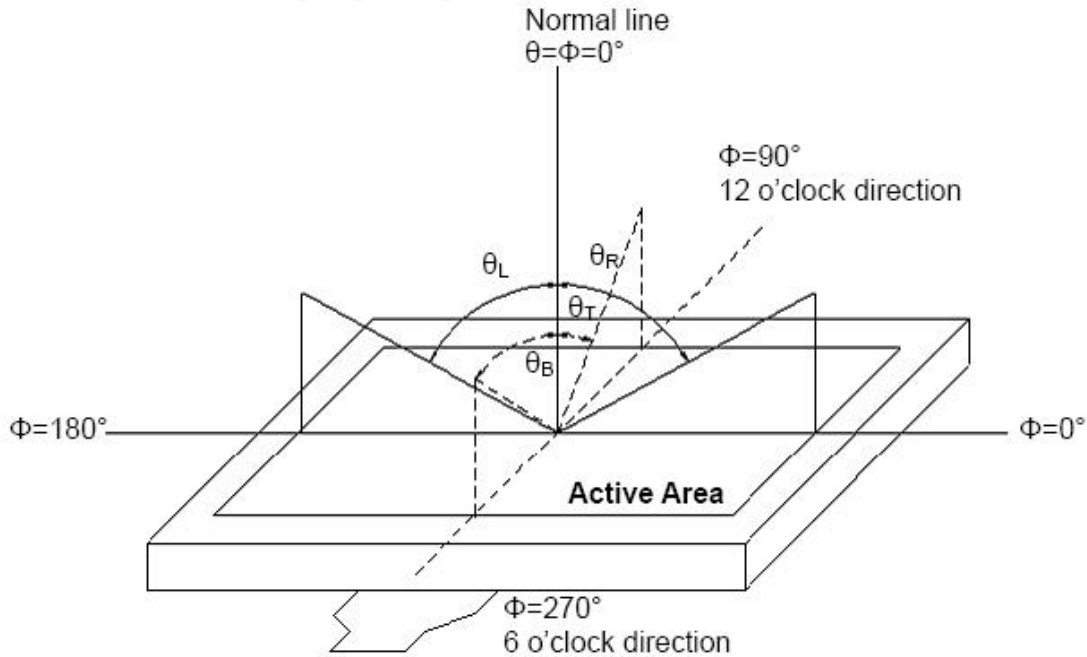


Fig. 4-1 Definition of viewing angle

Note 2: Definition of viewing angle range and measurement system.

viewing angle is measured at the center point of the LCD by CONOSCOPE(ergo-80).

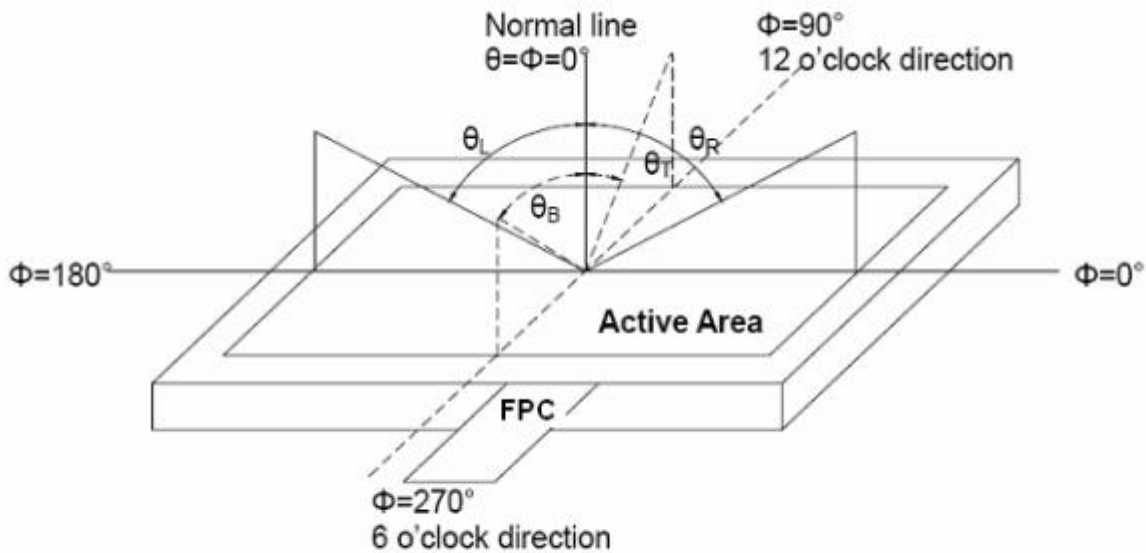


Fig. 1 Definition of viewing angle

Note 3: Definition of contrast ratio

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD is on the "White" state}}{\text{Luminance measured when LCD is on the "Black" state}}$$

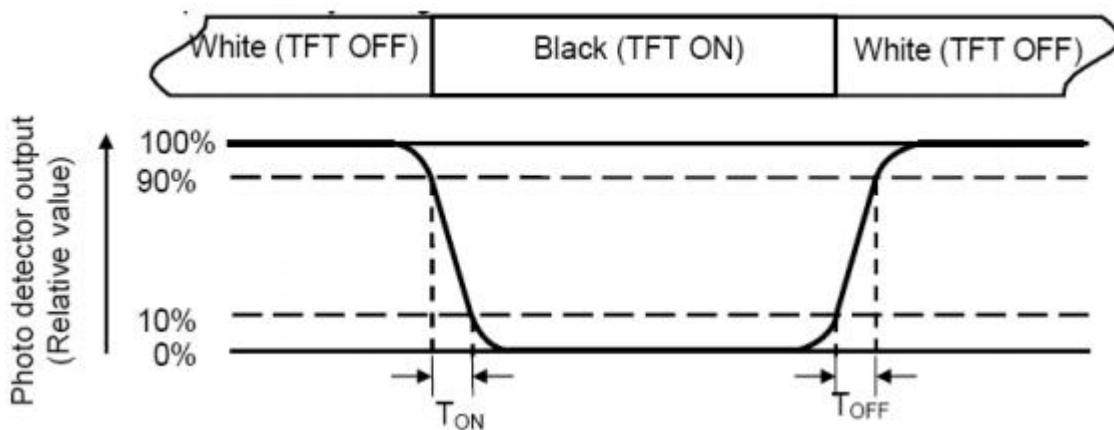
“White state”: The state is that the LCD should driven by V_{white} .

“Black state”: The state is that the LCD should driven by V_{black} .

V_{white} : To be determined V_{black} : To be determined.

Note 4: Definition of Response time

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time (T_{ON}) is the time between photo detector output intensity changed from 90% to 10%. And fall time (T_{OFF}) 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.

$$\text{Luminance Uniformity}(U) = L_{\text{min}} / L_{\text{max}} \times 100\%$$

L-----Active area length W----- Active area width

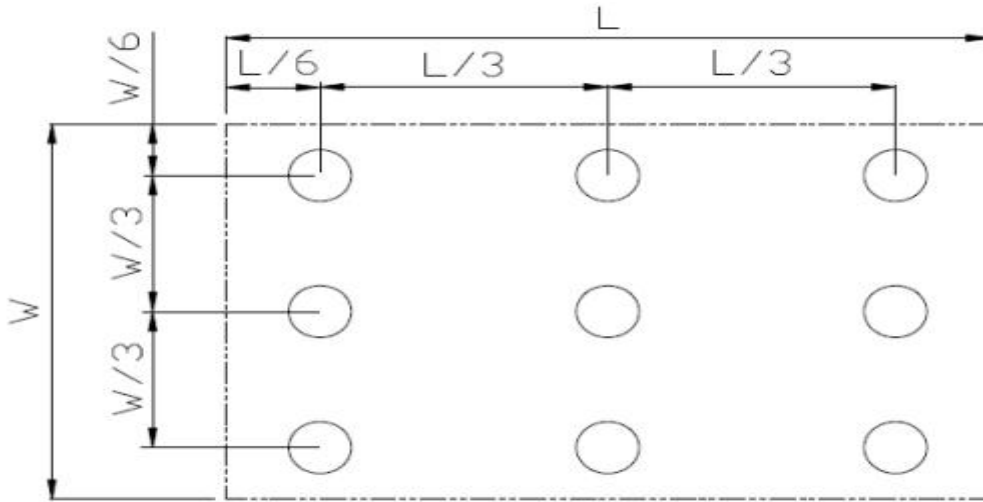


Fig. 2 Definition of uniformity

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.

8 Environmental / Reliability Tests

No	Test Item	Condition	Remarks
1	High Temperature Operation	Ts= +70℃, 96hrs	IEC60068-2-1:2007 GB2423. 2-2008
2	Low Temperature Operation	Ta= -20℃, 96hrs	IEC60068-2-1:2007 GB2423.1-2008
3	High Temperature Storage	Ta= +80℃, 96hrs	IEC60068-2-1:2007 GB2423. 2-2008
4	Low Temperature Storage	Ta= -30℃, 96hrs	IEC60068-2-1:2007 GB2423.1-2008
5	High Temperature & Humidity Operation	Ta= +60℃, 90% RH max, 96 hours	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, GB2423.22-2002
7	ESD	C=150pF, R=330 Ω, 5 points/panel , Air:±8KV, 5 times Contact: ±4KV, 5 times (Environment: 15℃ ~ 35℃, 30% ~ 60%, 86Kpa ~ 106Kpa)	IEC61000-4-2:2001 GB/T17626.2-2006
8	Vibration (Non-operation)	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/T2423.10-1995
9	Mechanical Shock (Non-operation)	Half Sine Wave 60G ,6ms,±X,±Y,±Z 3times for each direction	IEC60068-2-27:1987 GB/T2423.5—1995
10	Package Drop Test	Height: 60 cm, 1 corner, 3 edges, 6 surfaces	IEC60068-2-32:1990 GB/T2423.8-1995



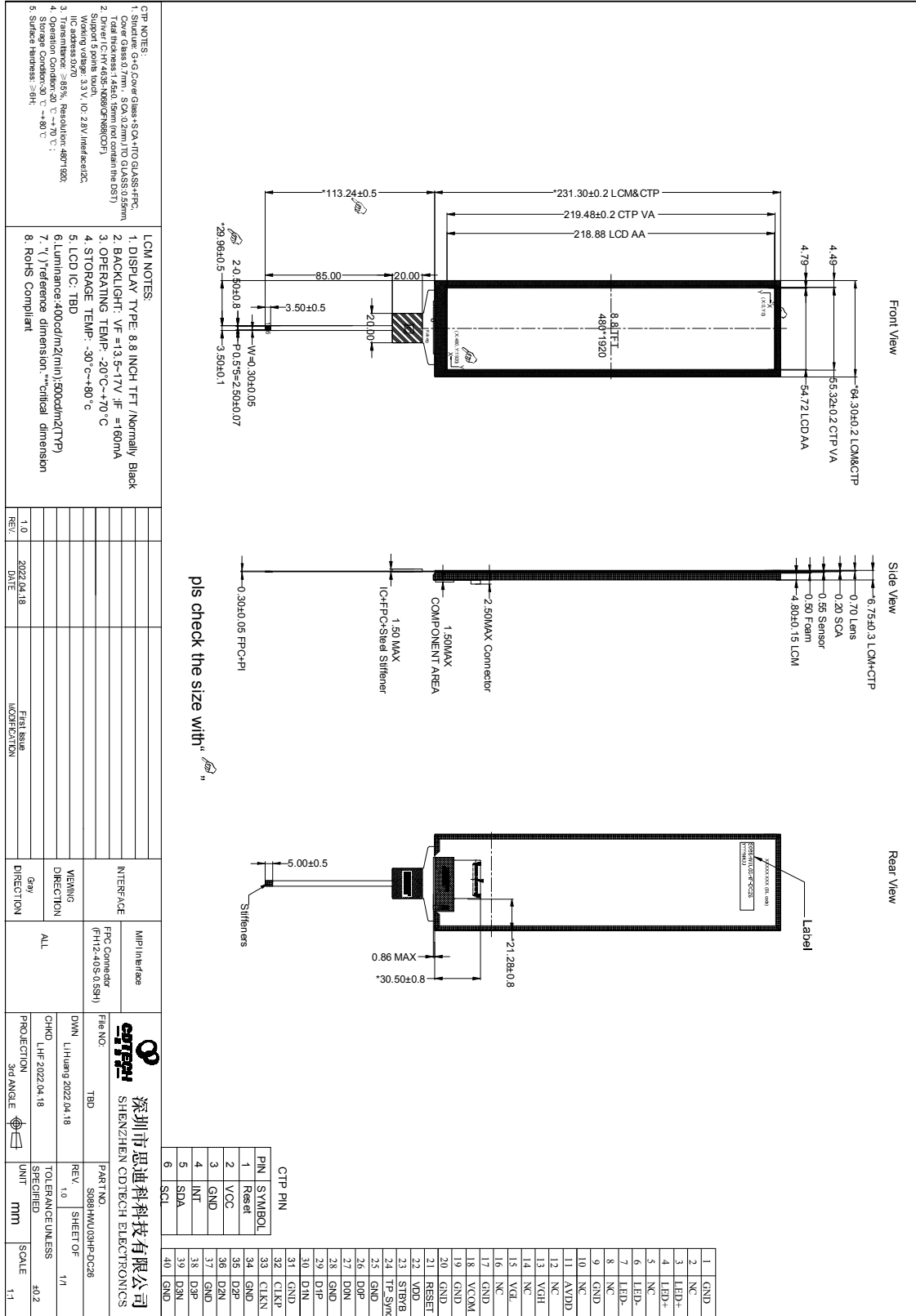
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Notes:

1. The test result shall be evaluated after the sample has been left at room temperature and humidity for 2 hours without load. No condensation shall be accepted. The sample will not be accepted if appear these defects:
 - 1).Air bubble in the LCD;
 - 2).Seal leak
 - 3).Non-display
 - 4).missing segments
 - 5).Glass crack
 - 6).CR reduction >40%
 - 7).IDD increase >100%
 - 8).Brightness reduction >50%
 - 9).Color coordinate tolerance >0.05
- 2.≤7.0 inch: The size of sample is 5pcs;
>7.0 inch: The size of sample is 2pcs;
3. One test sample must complete each test item;
- 4.In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judge as a good part.
- 5.In the test of High Temperature Operation and High Temperature & Humidity Operation ,the operation temperature is the surface temperature of module.

9 Mechanical Drawing





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10 Packing

Packing Method

TBD

11. TFT-LCD Module Inspection Criteria

11.1. Scope

The incoming inspection standards shall be applied to TFT –LCD Modules (hereinafter Called "Modules") that supplied by CDTech Technology LTD.

11.2. Incoming Inspection

The customer shall inspect the modules within twenty calendar days of the delivery date (the "inspection period") at its own cost. The result of the inspection (acceptance or rejection) shall be recorded in writing, and a copy of this writing will be promptly sent to The seller, If the results of the inspecting from buyer does not send to the seller within twenty Calendar days of the delivery date. The modules shall be regards as acceptance. Should the customer fail to notify the seller within the inspection period, the buyers Right to reject the modules shall be lapsed and the modules shall be deemed to have Been accepted by the buyer

11.3. Inspection Sampling

- 3.1. Lot size: Quantity per shipment lot per model
- 3.2. Sampling type: Normal inspection, Single sampling
- 3.3. Inspection level: II
- 3.4. Sampling table: MIL-STD-105E
- 3.5. Acceptable quality level (AQL)
Major defect: AQL=0.65 Minor defect: AQL=1.00

11.4. Inspection Conditions

4.1 Ambient conditions:

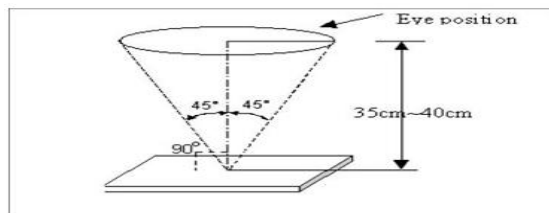
- a. Temperature: Room temperature $25 \pm 5^{\circ}\text{C}$
- b. Humidity: $(60 \pm 10) \% \text{RH}$
- c. Illumination: Single fluorescent lamp non-directive (300 to 700 Lux)

4.2 Viewing distance

The distance between the LCD and the inspector's eyes shall be at least $35 \pm 5 \text{ cm}$.

4.3 Viewing Angle

U/D: $45^{\circ}/45^{\circ}$, L/R: $45^{\circ}/45^{\circ}$



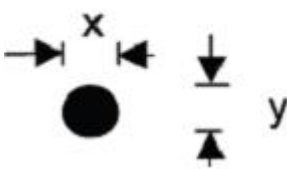
10.5 Inspection Criteria

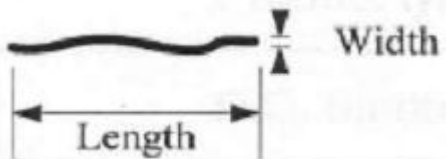
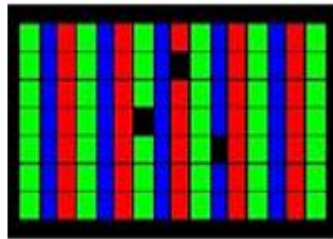
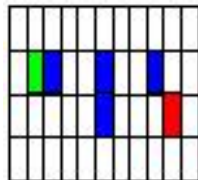
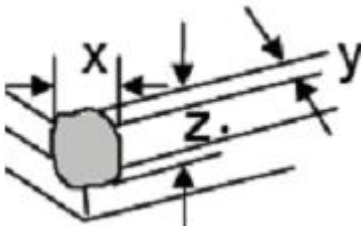
Defects are classified as major defects and minor defects according to the degree of Defectiveness defined herein.

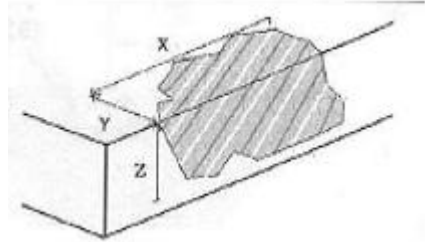
10.5.1 Major defect

Item No	Items to be inspected	Inspection Standard
5.1.1	All functional defects	1) No display 2) Display abnormally 3) Short circuit 4) line defect
5.1.2	Missing	Missing function component
5.1.3	Crack	Glass Crack

10.5.2 Minor defect

Item No	Items to be inspected	Inspection standard	
5.2.1	Spot Defect Including Black spot White spot Pinhole Foreign particle Polarizer dirt	For dark/white spot is defined $\varphi = (x+y) / 2$ 	
		Size ϕ (mm)	Acceptable Quantity
		$\phi \leq 0.2$	Ignore
		$0.2 < \phi \leq 0.5$	$N \leq 4$
		$0.5 < \phi$	Not allowed
5.2.2	Polarizer Dent/Bubble,	Size φ (mm)	Acceptable Quantity
		$\varphi \leq 0.2$	Ignore
		$0.2 < \varphi \leq 0.5$	$N \leq 4$
		$0.5 < \varphi$	Not allowed

5.2.3	Line Defect Including Black line White line Scratch	Define: 			
		Width(mm) Length(mm)		Acceptable Quantity	
		W≤0.03 L≤10		Ignore	
		0.03 < W≤0.1 L≤10		N≤5	
		0.1 < W, or L>10		Not allowed	
5.2.5	Electrical Dot Defect	Bright and Black dot define:   and  Two Adjacent Dot			
		Inspection pattern: Full white、Full black、Red、green and blue screens			
		Item	Acceptable Quantity		
			A	B	Total
		Black dot	1	2	3
		Bright dot	2	3	4
		Total Dot	3	4	5
5.2.6	Glass defect				
		1.Corner Fragment:			

		Size(mm)	Acceptable Quantity
		X≤3mm Y≤1mm Z≤T	Ignore T: Glass thickness X: Length Y: Width Z: thickness
		 2. Side Fragment:	
		Size(mm)	Acceptable Quantity
		X≤5.0mm Y ≤1mm Z≤T	Ignore T: Glass thickness X: Length Y: Width Z: thickness

- Note:
- 1). Dot defect is defined as the defective area of the dot area is larger than 50% of the dot area.
 - 2). The distance between two bright dot defects (red, green, blue, and white) should be larger than 15mm.
 - 3). The distance between black dot defects or black and bright dot defects should be more than 5mm apart.
 - 4). Polarizer bubble is defined as the bubble appears on active display area. The defect of polarizer bubble shall be ignored if the polarizer bubble appears on the outside of active display area.

10.6 Mechanics specification

As for the outside dimension, weight of the modules, please refer to product specification
For more details

12 Precautions for Use of LCD modules

12.1 Handling Precautions

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

12.1.2. 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.

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

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

12.1.5. If the display surface is contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If still not completely clear, moisten cloth with one of the following solvents:

- Isopropyl alcohol
- Ethyl alcohol

Solvents other than those mentioned above may damage the polarizer. Especially, do not use the following:

- Water
- Ketene
- Aromatic solvents

12.1.6. Do not attempt to disassemble the LCD Module.

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

12.1.8. To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.

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

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

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

12.1.8.4. 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.

12.2 Storage Precautions

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

12.2.2. 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%

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

12.3 Transportation Precautions

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