深圳市勋瑞光电科技有限公司
Xunrui photoelectric technology （shenzhen) CO,.LTD.

CERT. No. QAC0946535   CERT. No. HKG002005
(ISO9001)   (ISO14001)

Product Specification

Customer: _____

Model Name: _____ **H043HWQ40I7079** _____

Date: _____

Version: _____

■ **Preliminary Specification**

☐ **Final Specification**

For Customer's Acceptance

Approved by	Comment

Approved by	Reviewed by	Prepared by

深圳市勋瑞光电科技有限公司

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Contents

1. Record of Revision

Version	Revise Date	Content	Editor
1.0	2019/01/16	First Release.	Rich Liang

2 General Specifications

Feature		Spec
Characteristics	LCD Size	4.3 inch
	Display Format	480 (RGB) × 272
	Interface	24-bit RGB
	Color Depth	16.7M
	Technology type	a-Si
	Display Spec.	0.198 x 0.198
	Display Mode	Normally Black
	Driver IC	sc7283
	Surface Treatment	HC
	Viewing Direction	ALL
	Gray Viewing Direction	free
Mechanical	LCM (W x H x D) (mm)	105.40*67.15*2.90
	Active Area(mm)	95.04 x 53.86
	With /Without TSP	Without TSP
	Weight (g)	TBD
	LED Numbers	12LEDs

Note 1: Viewing direction is following the data which measured by optics equipment.
Note 2: Requirements on Environmental Protection: RoHS
Note 3: LCM weight tolerance: +/- 5%

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3 Input/Output Terminals

No.	Symbol	Description
1~2	GND	System Ground
3~4	VCC	Power supply for logic operation
5~12	R0~R7	Data bus
13~20	G0~G7	Data bus
21~28	B0~B7	Data bus
29	GND	System Ground
30	DOTCLK	Pixel clock signal
31	DISPLAY	Display on/off control
32	HSYNC	Horizontal Sync signal
33	VSYNC	Vertical Sync signal
34	SCL	Serial communication clock input.
35	SDA	Serial communication data input and output.
36	CS	Serial communication chip selection. CS is not used in I2C interface and should be connected to "H".
37	NC(GRB)	Global reset pin.
38	NC(DE)	Data Enable
39	VBL-(K)	Backlight LED Cathode
40	VBL+(A)	Backlight LED Anode.

4 Absolute Maximum Ratings

Item	Symbol	MIN	MAX	Unit	Remark
Supply Voltage	V_{DD}	-0.3	4.5	V	
Input Signal Voltage	V_{in}	-0.3	VDD+0.3	V	
Logic Output Voltage	V_{OUT}	-0.3	VDD+0.3	V	
Operating Temperature	T_{OPR}	-30	85	℃	
Storage Temperature	T_{STG}	-30	85	℃	

5 Electrical Characteristics

5.1 Operating conditions:

Parameter	Symbol	MIN	TYP	MAX	Unit	Remark
Power Voltage	V_{cc}	3.0	3.3	3.6	V	
Digital Operation Current	Icc		5		mA	
Gate On Power	V_{COMH}	9	15	16	V	
Gate Off Power	V_{GH}	-11	-10	-7	V	
Vcom High Voltage	VcomH	3.26	-	5.8	V	Note1
Vcom low Voltage	VcomL	-2	-	-0.2	V	Note1

5.2 Driving Backlight

Item	Symbol	MIN	TYP	MAX	Unit	Remark
LED current	I_F	-	40	-	mA	
Power Consumption		-	720	-	mW	
LED Voltage	V_F	-	18	-	V	Note 1
LED Life Time	W_{BL}	50000	-	-	Hr	Note 2,3

Note 1 : There are 2 Groups LED
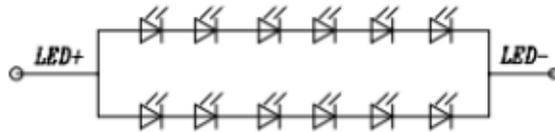
Note 2 : Ta = 25℃

Note 3 : Brightness to be decreased to 50% of the initial value

6 Interface Timing

6.1 Parallel RGB Data Format

Item		Symbol	Min.	Typ.	Max.	Unit	Remark
DCLK Frequency		Fclk	8	9	12	MHz	
DCLK Period		Tclk	83	111	125	ns	
HSYNC	Period Time	Th	485	531		DCLK	
	Display Period	Thdisp		480		DCLK	
	Back Porch	Thbp	3	43		DCLK	By H_Blanking setting
	Front Porch	Thfp	2	8		DCLK	
	Pulse Width	Thw	2	4		DCLK	
VSYNC	Period Time	Tv	276	292		H	
	Display Period	Tvdisp		272		H	
	Back Porch	Tvbp	2	12		H	By V_Blanking setting
	Front Porch	Tvfp	2	8		H	
	Pulse Width	Tvw	2	4		H	

Note: It is necessary to keep Tvbp =12 and Thbp =43 in sync mode. DE mode is unnecessary to keep it.

6.2 SYNC Mode Timing Diagram
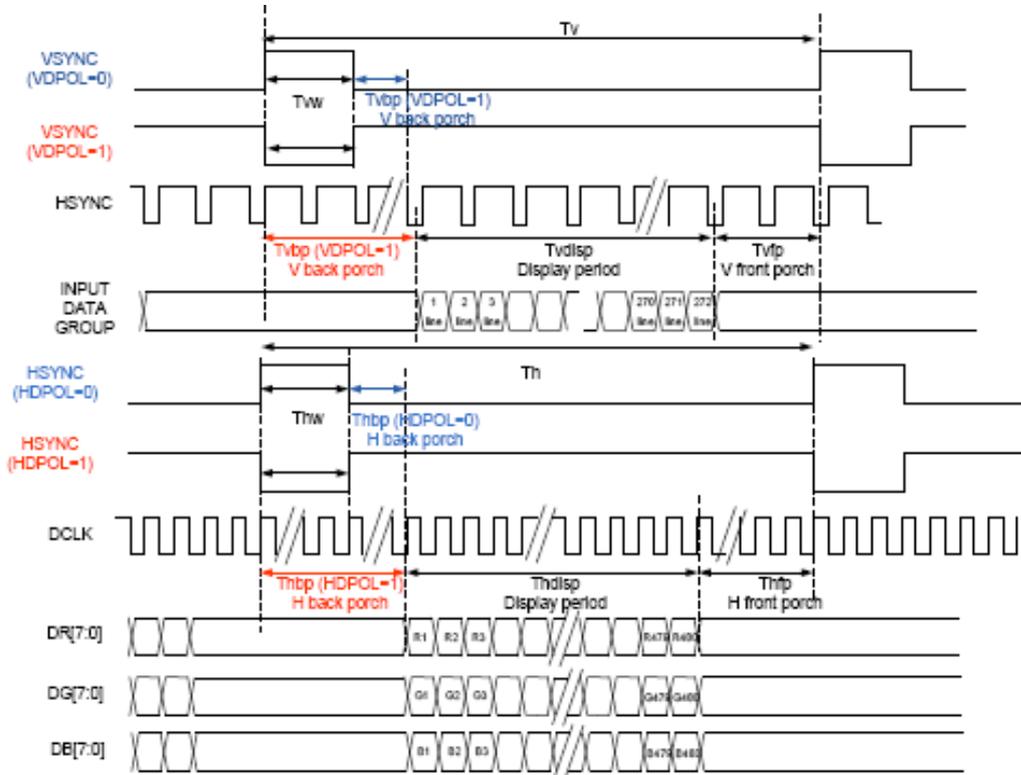
6.3 SYNC-DE Mode Timing Diagram
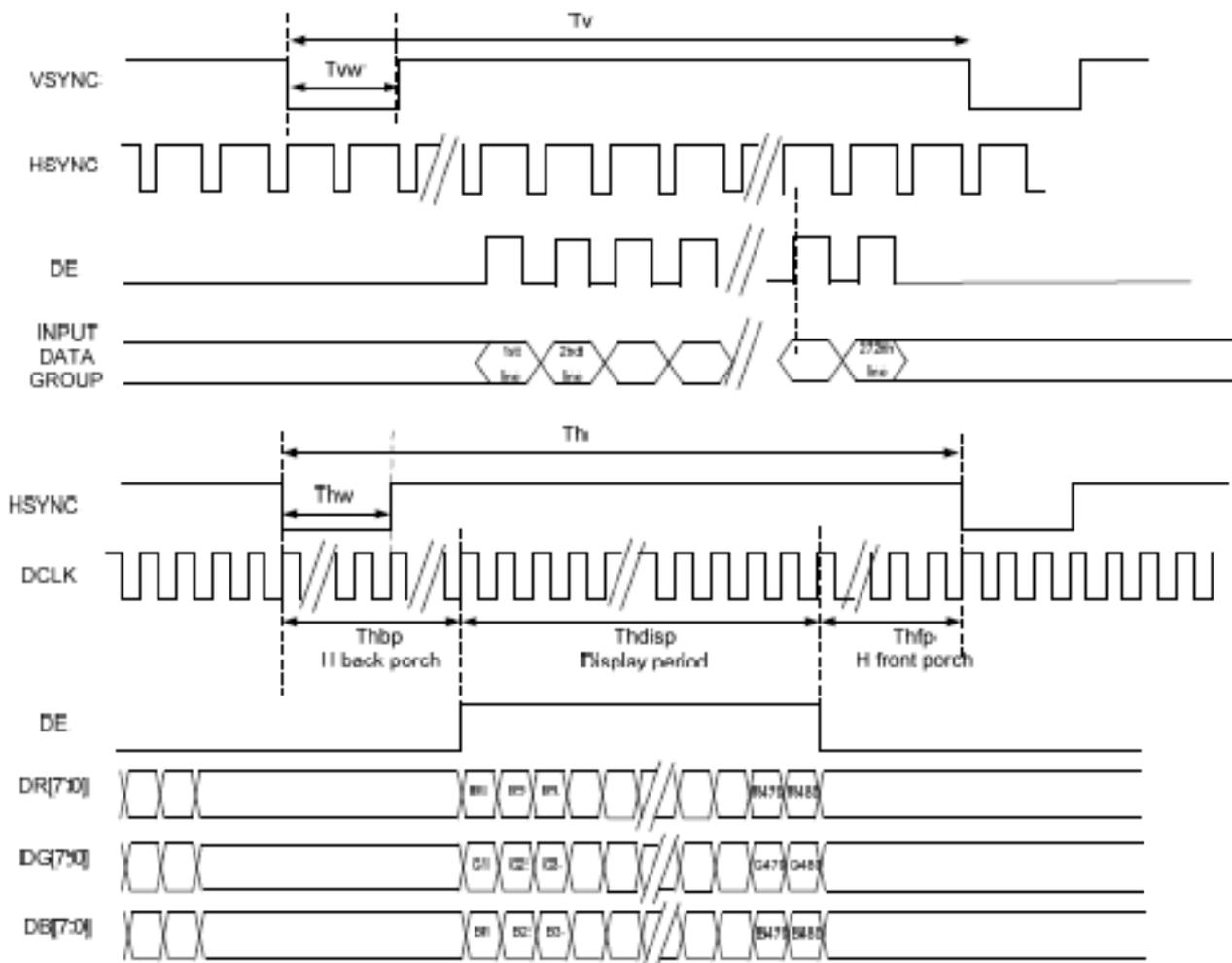
DE Mode Timing Diagram
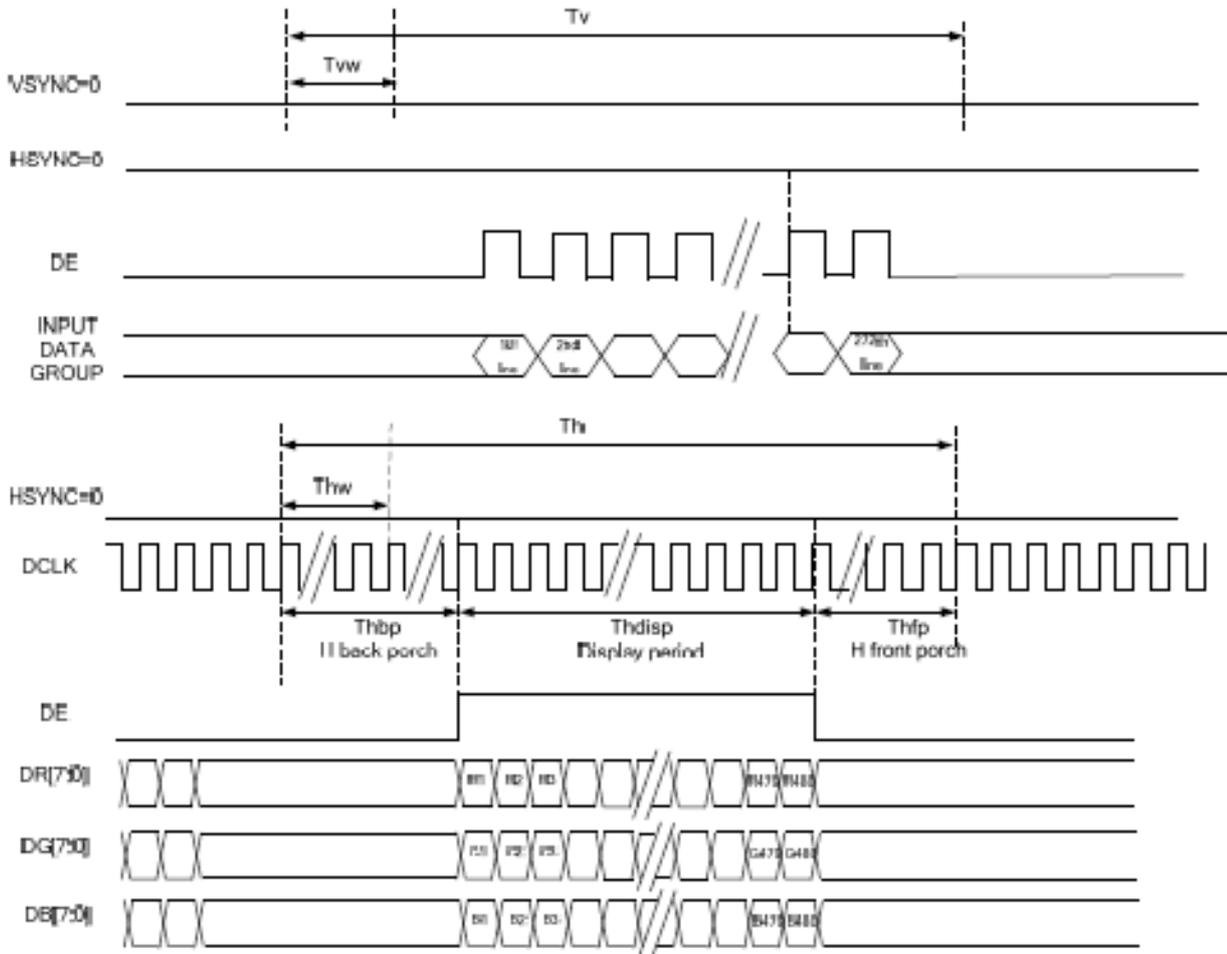
6.4 Clock and Data Input Timing Diagram
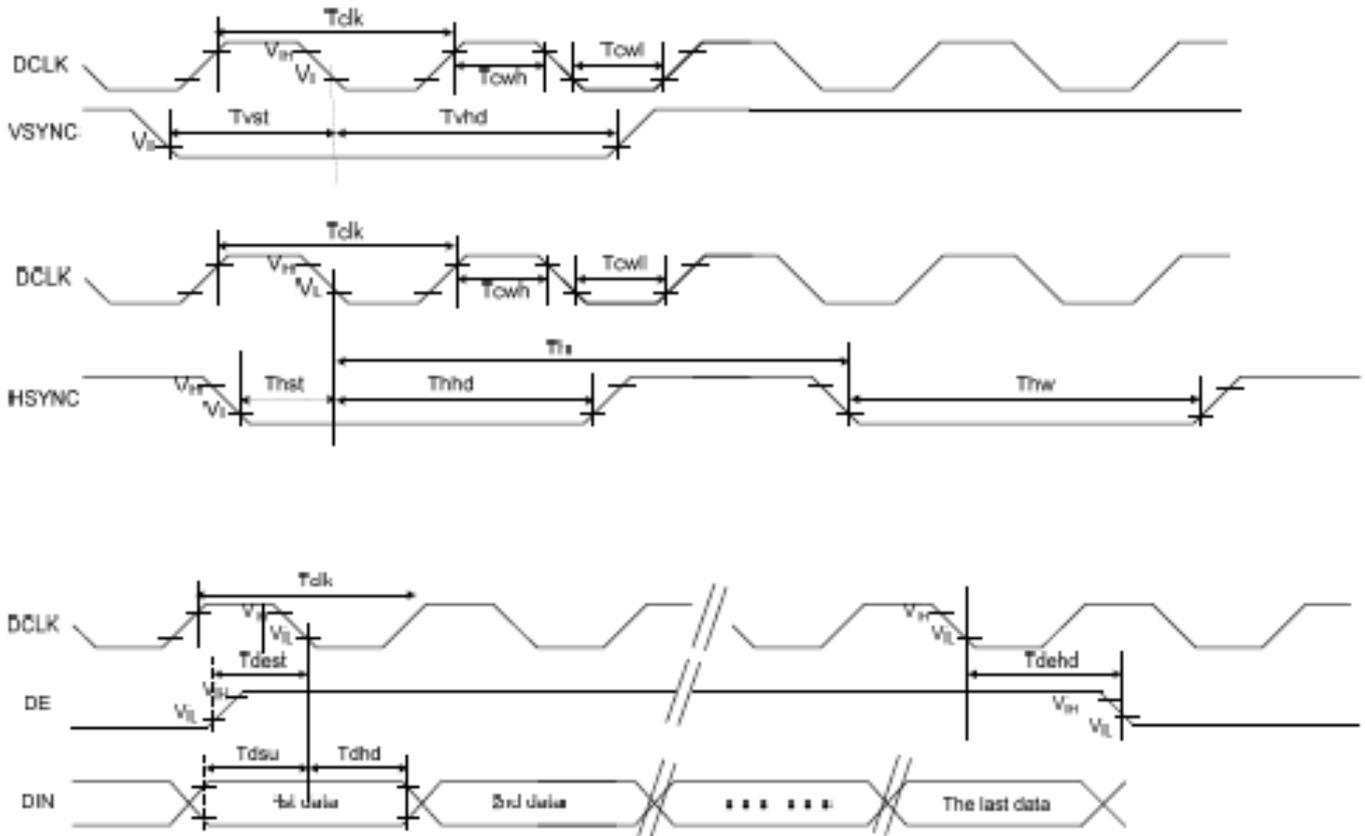
7 Optical Characteristics

Items		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing angles		θ_T	Center CR≥10	-	80	-	Degree.	Note2
		θ_B		-	80	-		
		θ_L		-	80	-		
		θ_R		-	80	-		
Contrast Ratio		CR	Θ =0	600	800		-	Note1, Note3
Response Time		T_{ON}	25° C	-	30	45	ms	Note1, Note4
		T_{OFF}		45	50			
Chromaticity	White	X_W	Backlight is on	0.282	0.312	0.342	-	Note1, Note5
		Y_W		0.319	0.349	0.379	-	
	Red	X_R		0.609	0.639	0.669	-	
		Y_R		0.314	0.344	0.374	-	
	Green	X_G		0.264	0.294	0.324	-	
		Y_G		0.557	0.587	0.617	-	
	Blue	X_B		0.102	0.132	0.162	-	
		Y_B		0.106	0.136	0.166	-	
Uniformity		U		75	80	-	%	Note1, Note6
NTSC					50		%	Note5
Luminance		L			700			Note1, Note7

Test Conditions:
1. IF= 20Ma (one channel),the ambient temperature is 25°C.
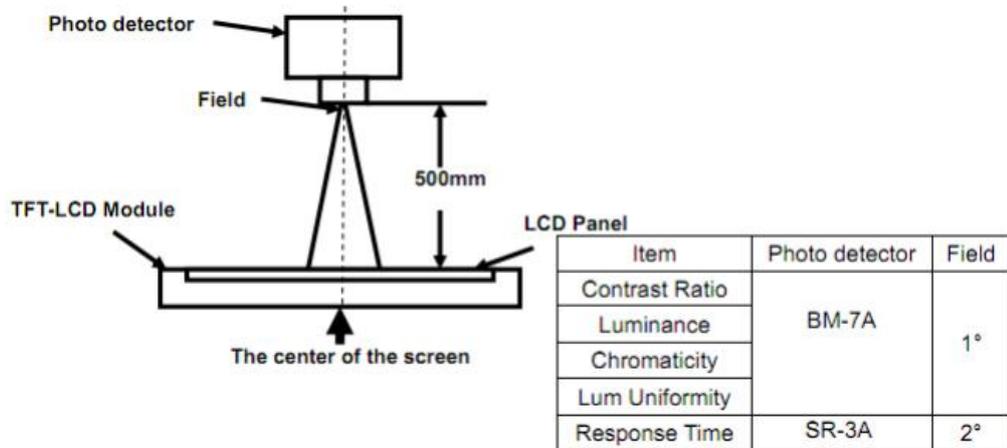2. The test systems refer to Note 1 and Note 2.

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 the LCD screen. All input terminals LCD panel must be ground when measuring the center area of the panel.

Item	Photo detector	Field
Contrast Ratio	BM-7A	1°
Luminance		
Chromaticity		
Lum Uniformity		
Response Time	SR-3A	2°

Note 2: Definition of viewing angle range and measurement system.
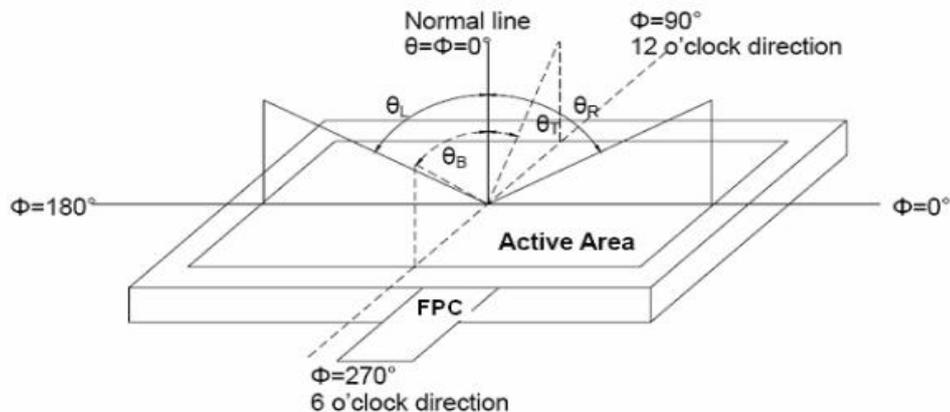Viewing angle is measured at the center point of the LCD by CONOSCOPE (ergo-80).

Fig. 1 Definition of viewing angle

Note 3: Definition of contrast ratio

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD is on the "White" state}}{\text{Luminance measured when LCD is on the "Black" state}}$$
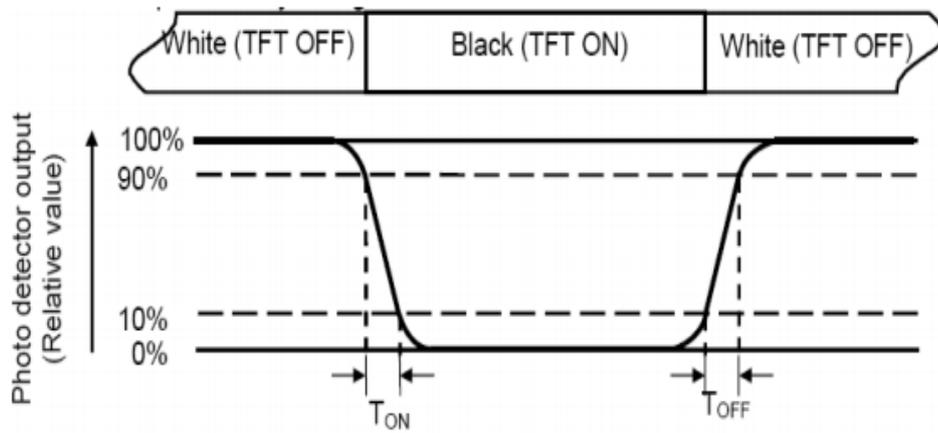
Note 4: Definition of Response time
The response time is defined as the LCD optical switching time interval
Between "White" state and "Black" state.   Rise time (TON) is the time between
Photo detector output intensity changed from 90% to 10%. And fall time (TOFF) is
The time between photo detector output 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 X100%
L-------Active area length W----- Active area width
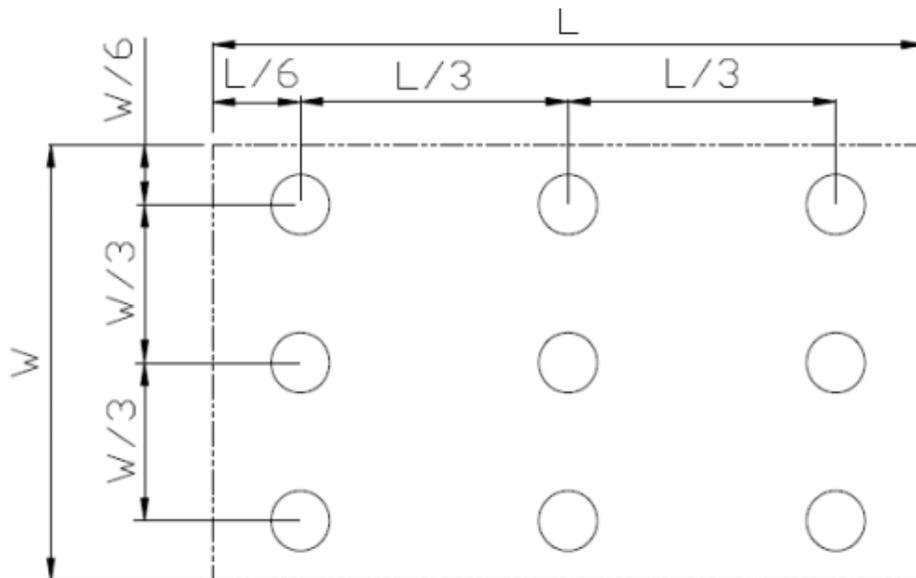

Fig. 2 Definition of uniformity

Lmax: The measured maximum luminance of all measurement position.
Lmin: The measured minimum luminance of all measurement position.
Note 7: Definition of Luminance:
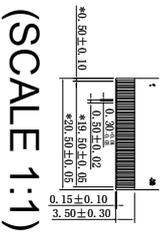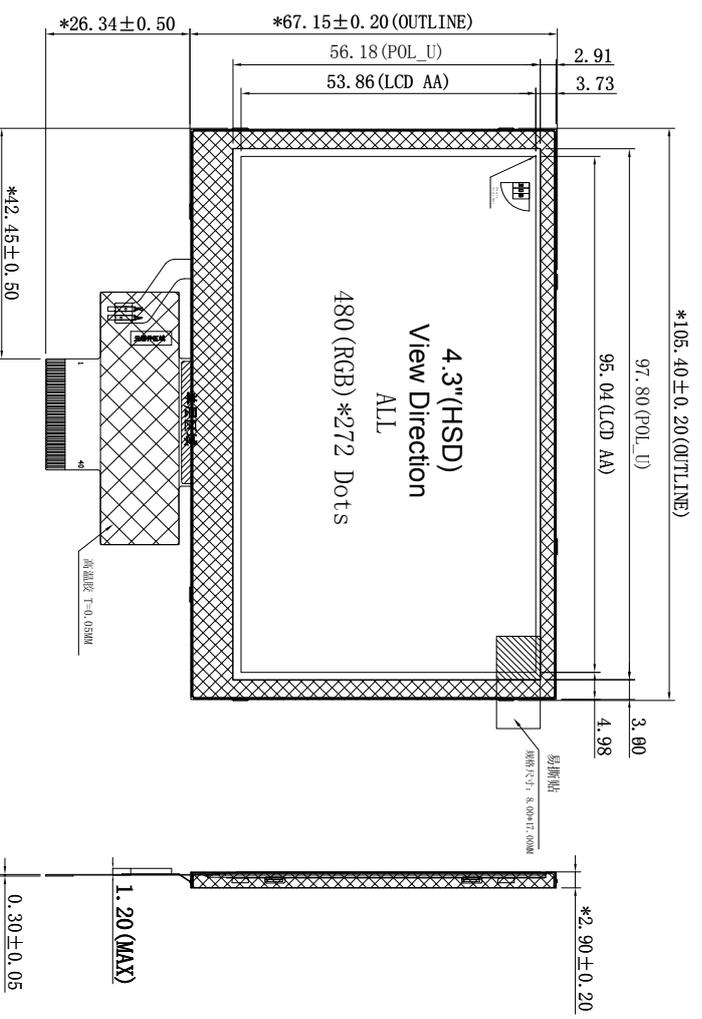Measure the luminance of white state at center point.
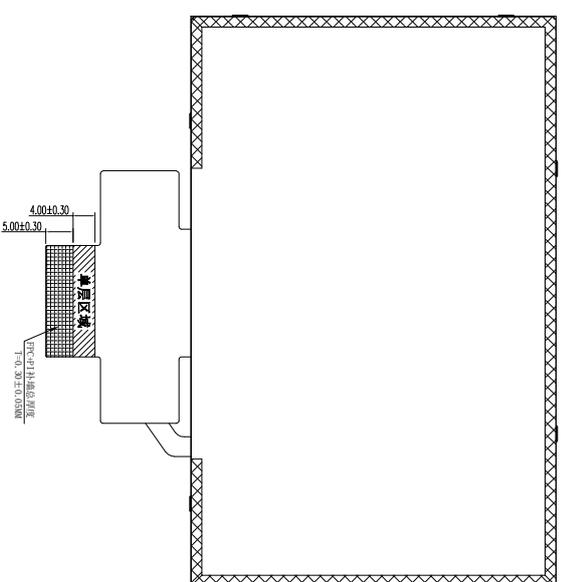
8 Environmental / Reliability Tests

No	Test Item	Condition	Remarks
1	High Temperature Operation	Ts= +85℃, 240hrs	Note 1 IEC60068-2-2, GB2423. 2-89
2	Low Temperature Operation	Ta= -30℃, 240hrs	Note 2 IEC60068-2-1 GB2423.1-89
3	High Temperature Storage	Ta= +85℃, 240hrs	IEC60068-2-2 GB2423. 2-89
4	Low Temperature Storage	Ta= -30℃, 240hrs	IEC60068-2-1 GB/T2423.1-89
5	High Temperature & Humidity Storage	Ta= +60℃, 90% RH max, 160 hours	IEC60068-2-3 GB/T2423.3-2006
6	Thermal Shock (Non-operation)	-30℃ 30 min ~ +80℃ 30 min Change time: 5min, 30 Cycle	Start with cold temperature, end with high temperature IEC60068-2-14, GB2423.22-87
7	Electro Static Discharge (Operation)	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 GB/T17626.2-1998
8	Vibration (Non-operation)	Frequency range: 10~55Hz, Stroke: 1.mm Sweep: 10Hz~55Hz~10Hz 2 hours for each direction of X .Y. Z. (package condition)	IEC60068-2-6 GB/T2423.5-1995
9	Shock (Non-operation)	60G 6ms, ± X, ±Y , ± Z 3 times for each direction	IEC60068-2-27 GB/T2423.5-1995
10	Package Drop Test	Height: 60 cm, 1 corner, 3 edges, 6 surfaces	IEC60068-2-32 GB/T2423.8-1995

Note: 1. T_S is the temperature of panel's surface.

2. Ta is the ambient temperature of sample.

9 Mechanical Drawin

NOTES:

1. DISPLAY TYPE:4.3 INCH TFT /TRANSMISSIVE
2. BACKLIGHT: CHIP WHITE LED, IN PARALLEL
3. OPERATING TEMP:
4. STORAGE TEMP:
5. RESOLUTION:
6. LCD IC:
7. "()"reference dimension. "*"critical dimension
8. RoHS Compliant

#		
1	Operating Voltage:	VCC=3.3V TYP
2	Resolution:	480RGB*272
3	Color:	16M
4	Interface:	24-bits RGB
5	Display type:	Transmissive,VA, Normally Black
6	polarizer surface treatment:	Glare
7	Viewing Direction:	Full view
8	Operating Temp:	-30°C~+85°C
9	Storage Temp:	-30°C~+85°C
10	Driver IC:	SC7283
11	CTP Driver IC:	
12	LCM Luminance:	TDB
13	Unspecified tolerance :	±0.30
14	Dimensions with mark"*" are important	

(SCALE 1:1)

4.3"(HSD)
View Direction
ALL
480(RGB)*272 Dots

BACKLIGHT CIRCUIT DIAGRAM:
(If=20mA/LED , 2.8V~3.2V/LED)

INTERFACE	RGB Interface
	FPC Connector
VIEWING DIRECTION	ALL
Gray Scale DIRECTION	FREE

MODEL NAME	TFT Display Module	
DWN	Rich Lin	CHKD
		Rich Liang

PIN	SYMBLE
1	GND
2	GND
3	VCC
4	VCC
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	DOTCLK
31	DISPLAY
32	HSYNC
33	VSYNC
34	SCL
35	SDA
36	CS
37	NC(GR
38	NC(DE
39	K
40	A

PART NO.	H043HWQ40I7079	
REV.	1.0	SHEET OF
		1/1
TOLERANCE UNLESS SPECIFIED		UNIT
		mm
PROJECTION	3RD ANGLE	SCALE
		1:1

1 0.Packing

Packing Method

2PCS
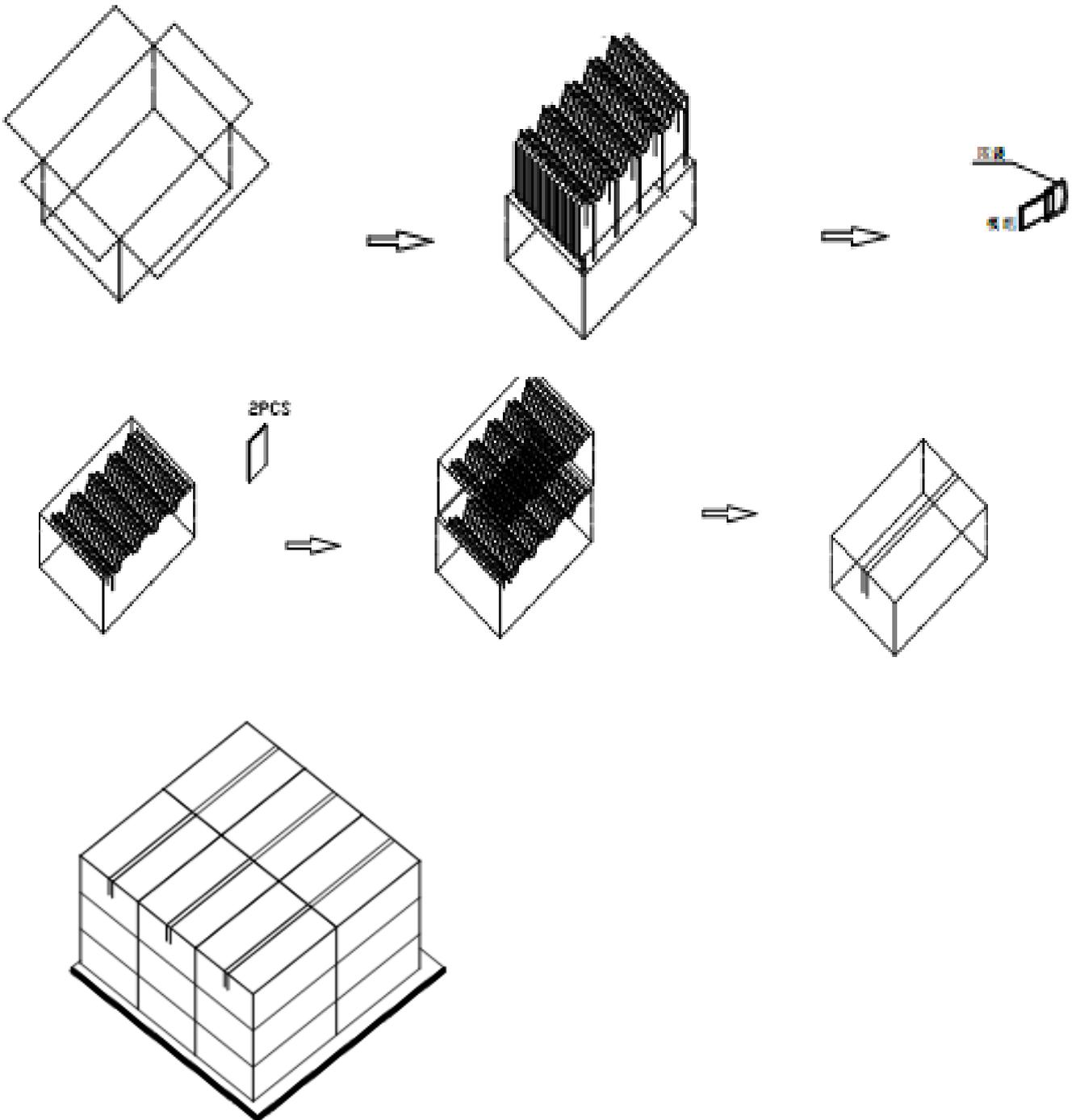
11. Precautions for Use of LCD modules

11.1 Handling Precautions

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

11.1.2. 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.

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

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

11.1.5. 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

11.1.6. Do not attempt to disassemble the LCD Module.

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

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

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

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

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

11.1.8.4. 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.

11.2 Storage Precautions

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

11.2.2. 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%

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

11.3 Transportation Precautions

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