

**SPECIFICATION
FOR
LCM MODULE**

MODULE NO.: BF4340-03

REVISION NO.: V0

Customer Approval:

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	SIGNATURE
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Revision Record

Rev No	Date	Description
V0	2021/12/30	First release

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1. General Specifications

No.	Item	Specification	Unit	Remark
1	LCD Size	4.3"	inch	-
2	Panel Type	IPS	-	-
3	Resolution	480xRGBx272	Pixel	-
4	Display Mode	Normally Black	-	-
5	Number of Colors	16.7M	-	-
6	Viewing Direction	ALL	-	Note1
7	NTSC	50%	-	Typ.
8	Contrast Ratio	1000	-	
9	Luminance	350	cd/m ²	Typ.
10	Module Size	67.10(H)x105.40(V)x2.97(D)	mm	Note1
11	Panel Active Area	95.04X53.86	mm	Note1
12	Pixel Pitch	0.198x0.198	mm	-
13	Pixel Arrangement	RGB-stripe		-
14	Weight	TBD	g	-
15	Driver IC	NV3047	-	-
16	Driver IC RAM Size	RAM less	bit	-
17	Light Source	10 LED light	-	-
18	Interface	RGB 24BIT	-	-
19	Operating Temperature	-20~+70	°C	-
20	Storage Temperature	-30~+80	°C	-

Note 1: Please refer to the mechanical drawing ;

2. Pin Assignments

Pin No. Pin	Symbol	Function
1	LEDK	Backlight cathode
2	LED_A	Backlight anode
3	GND	Ground
4	VCC	Analog Power Supply for LCM (2.8V)
5-12	R0-R7	Data bus
13-20	G0-G7	Data bus
21-28	B0-B7	Data bus
29	GND	Ground
30	CLK	Pixel clock signal in RGB I/F
31	DISP	Display
32	HSYNC	Horizontal sync . Signal in RGB I/F
33	VSYNC	Vertical sync . Signal in RGB I/F
34	DEN	Data enable signal in RGB I/F DE mode
35	NC	
36	GND	Ground
37	XR	Touch panel pin
38	YD	Touch panel pin
39	XL	Touch panel pin
40	YU	Touch panel pin

3. Electrical Specification

3.1 Absolute Maximum Ratings

Item	Symbol	Value	Unit	Remark
Analog Power Supply Voltage	VDD	-0.3~+4.6	V	-
Logic Input Voltage Range	VIN	-0.3~VDDI+0.3	V	-
Logic Output Voltage Range	VO	-0.3~VDDI+0.3	V	-

3.2 Typical Operation Conditions

Item	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	VDD	3.0	3.3	3.6	V
NVM Supply Voltage	VPP	7.4	7.5	7.6	V
Input High Voltage	V _{IH}	0.7*VDD	-	VDD	V
Input Low Voltage	V _{IL}	DGND	-	0.3*VDD	V
Output High Voltage	V _{OH}	VDD-0.4	-	VDD	V
Output Low Voltage	V _{OL}	DGND	-	DGND+0.4	V

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3.3 Backlight Circuit Characteristics

Item	Symbol	Min.	Typ.	Max.	Unit
LED Current	I_B	-	40	50	mA
LED Voltage	V_f	-	16	18	V
Power Consumption	P_{BL}	-	640	-	mW

3.4 LCD Current Consumption

Item	Symbol	Typ.	Max.	Unit
Full Mode	VCI	-	-	mW
Test : VCI=2.8V , IOVCC=2.8V ; Interface TN Type=>All Black Pattern. TN ; IPS Type=>All White Pattern. IPS面 ; Temperature : 25°C ;				
Sleep Mode	VCI	-	-	mW
Test : VCI=2.8V , IOVCC=2.8V ; DC/DC converter is enabled. Internal oscillator is started and panel scanning is started. Temperature : 25°C ;				

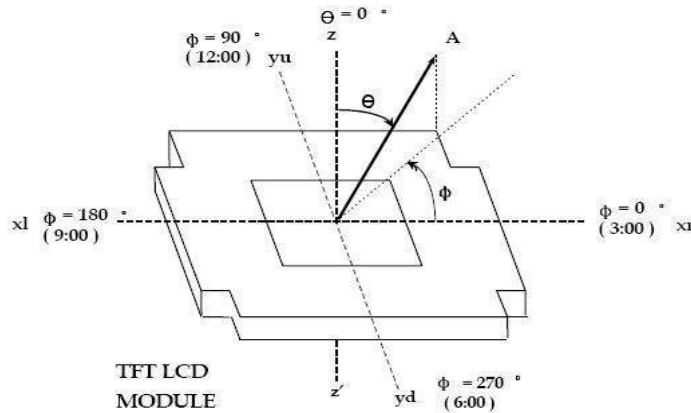
4. Optical Specification

4.1 LCM Optical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Viewing Angle Range	Left	θ_L	$CR \geq 10$	80	85	-	degree
	Right	θ_R		80	85	-	
	Top	θ_T		80	85	-	
	Bottom	θ_B		80	85	-	
Response Time		Ton+Toff	$\theta = \Phi = 0^\circ$	-		40	ms
Contrast Ratio		CR	$\theta = \Phi = 0^\circ$	800	1000	-	-
Luminance		L	$\theta = \Phi = 0^\circ$	300	350	-	cd/m ²
Color Chromaticity (CIE1931)	White	W_x	Normal $\theta = \Phi = 0^\circ$		0.307		-
		W_y			0.33		
	Red	R_x			0.608		
		R_y			0.323		
	Green	G_x			0.317		
		G_y			0.549		
	Blue	B_x			0.145		
		B_y			0.138		
Uniformity		U_L	$\theta = \Phi = 0^\circ$	-	75	-	%
Flicker		-	-	No Visible			-

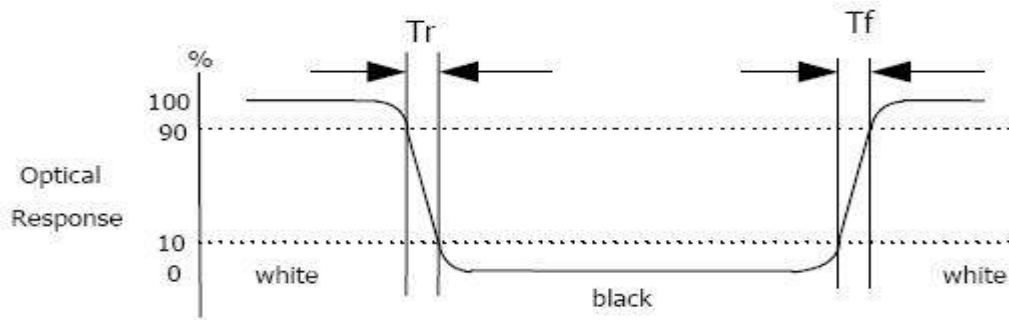
4.2 Measurement system

4.2.1 LCM Viewing Angle



Viewing angle is the angle at which the contrast ratio is greater than 10. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface.

4.2.2 Response time



Response time is the time required for the display to transition from white to black (Rising time, T_r) and from black to white (Falling time, T_f) for additional information.

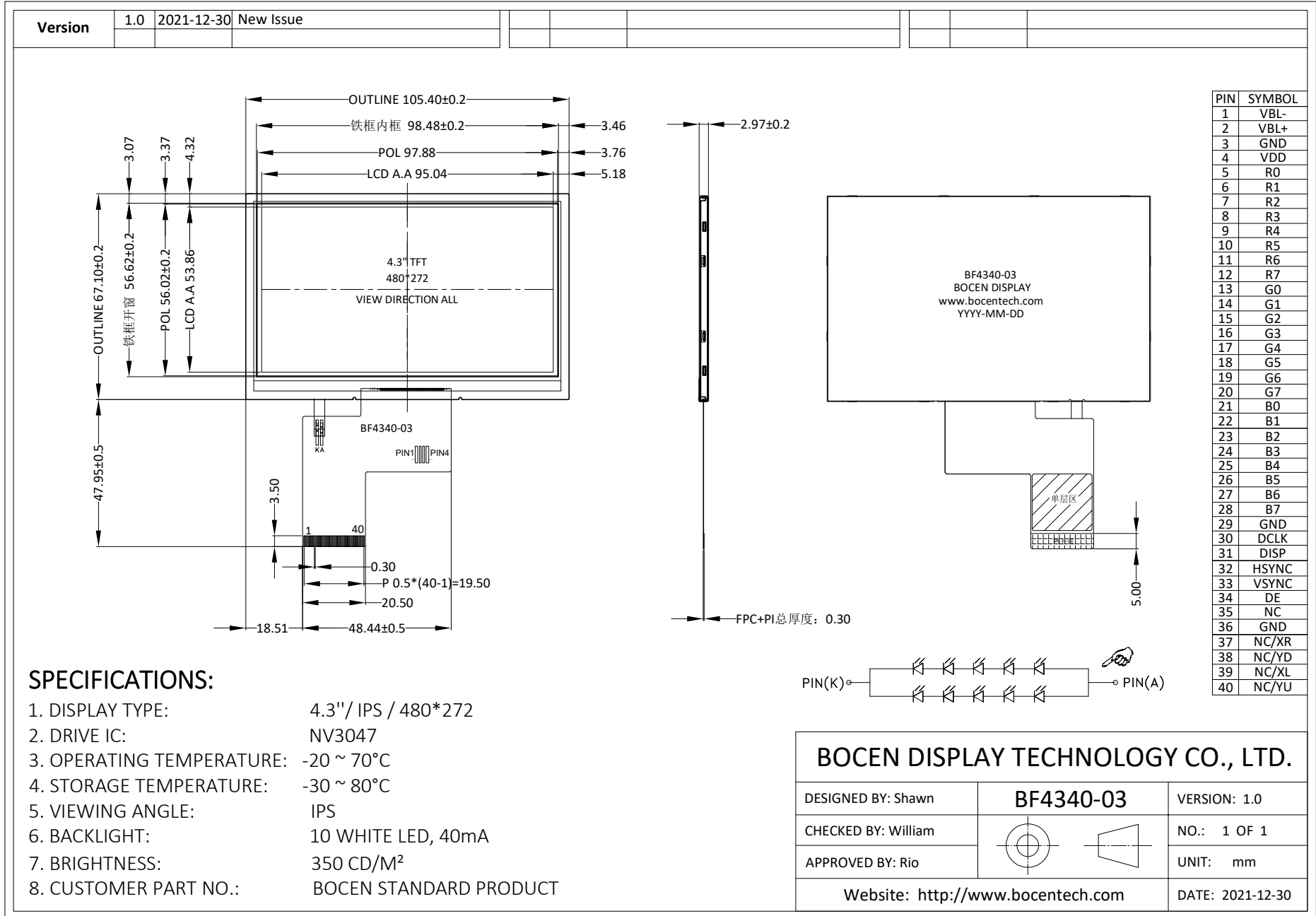
4.2.3 Contrast Ratio (CR)

Contrast Ratio (CR) is defined mathematically as:

$$\text{Contrast Ratio} = \frac{\text{Surface Luminance with all white pixels}}{\text{Surface Luminance with all black pixels}}$$

Surface luminance is the center point across the LCD surface 500mm from the surface with all pixels displaying white.

5. Mechanical Drawing



6. Reliability Test Items

Test Item	Test Condition	Test result determinant gist
High temperature storage	80±3°C , 24H ;	Inspection after 2~4hours storage at room temperature, the sample shall be free from defects: 1.Air bubble in the LCD; 2.Non-display; 3.Glass crack; 4.The electrical characteristics requirements shall be satisfied.
Low temperature storage	-30±3°C , 24H ;	
High temperature operation	70±3°C , 24H ;	
Low temperature operation	-20±3°C , 24H ;	
High temperature / humidity	60°C±3°C,90%±3%RH , 24H ;	
Thermal Shock	-30°C/0.5h~+80°C/0.5h for a total 24 cycles ;	
Vibration Test	Frequency 10Hz~55Hz~10Hz Amplitude : 1.5mm, X , Y , Z direction for total 1H ; (Packing condition)	
ESD test	±2KV, Human Body Mode, 150pF/330Ω ; ±8KV, Air Mode, 150pF/330Ω ;	

Remark:

1. The test samples should be applied to only one test item.

2. Sample size for each test item is 2pcs.

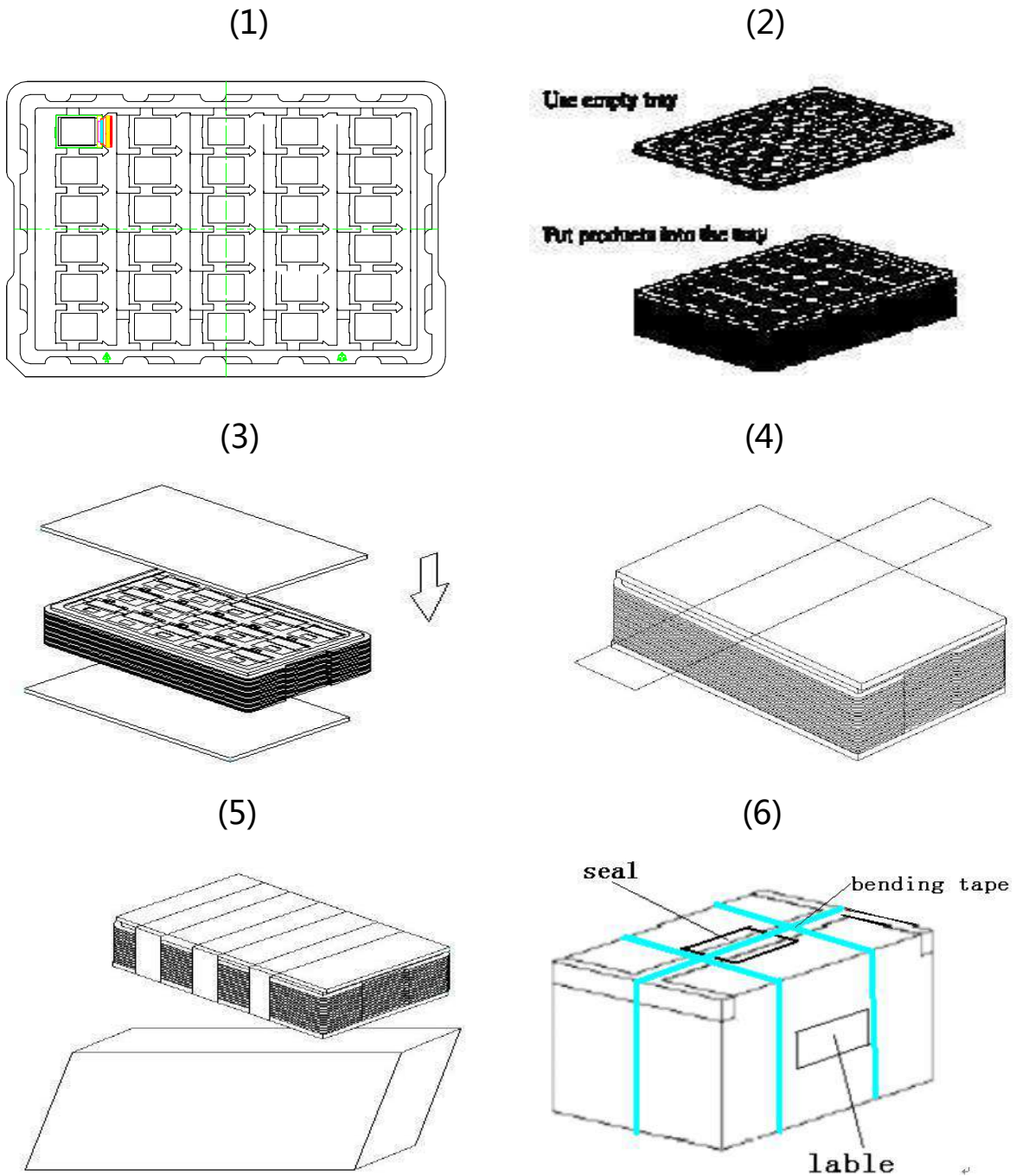
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3. Failure Judgment Criterion: Basic Specification, Electrical Characteristic, Mechanical Characteristic,
Optical Characteristic.

7. Packing and Storage Specification(Reference Only)

7.1 Packing Method



1. Put module into tray cavity.

2. Tray stacking.

3. Put 1 foam under the tray stack and 1 foam above.
4. Fix the cardboard to the tray stack with adhesive tape.
5. Put the tray stack into carton.
6. Carton sealing with adhesive tape.

7.2 Storage Method

1. Store in an ambient temperature of $23^{\circ}\text{C}\pm 5^{\circ}\text{C}$, and in a relative humidity of $55\%\pm 15\%$. Don't exceed 12 months and expose to sunlight or fluorescent light.
2. Store in a clean environment, free from dust, active gas, and solvent.
3. Store in antistatic container.

8. Announcements

1. Do not attempt to disassemble or process the LCD module.
2. Do not make extra holes on the printed circuit board, modify its shape or change the positions of components to be attached.
3. Except for soldering the interface, do not make any alterations or modifications with a soldering iron; Ensure welding temperature at 320°C to 350°C , the welding time

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control within the 10 s, welding note don't stay too long in the same place to avoid scald FPC.

4. Other matters in not clear before use, please contact our staff to guide.