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ET082CR01-GXT

Product Specification Rev.P0

Buyer	
Supplier	YOURITECH TECHNOLOGY
FG-Code	ET082CR01-GXT

ITEM	SIGNATURE	DATE	ITEM	SIGNATURE	DATE
Approved	_____	_____	Approved	_____	_____
Reviewed	_____	_____	Reviewed	_____	_____
Prepared	_____	_____	Prepared	_____	_____
			YOURITECH TECHNOLOGY		



REVISION HISTORY

REV.	ECN NO.	PAGE	DESCRIPTION OF CHANGES	DATE	PREPARED
P0			Initial Release	2025.8.29	BlestPan



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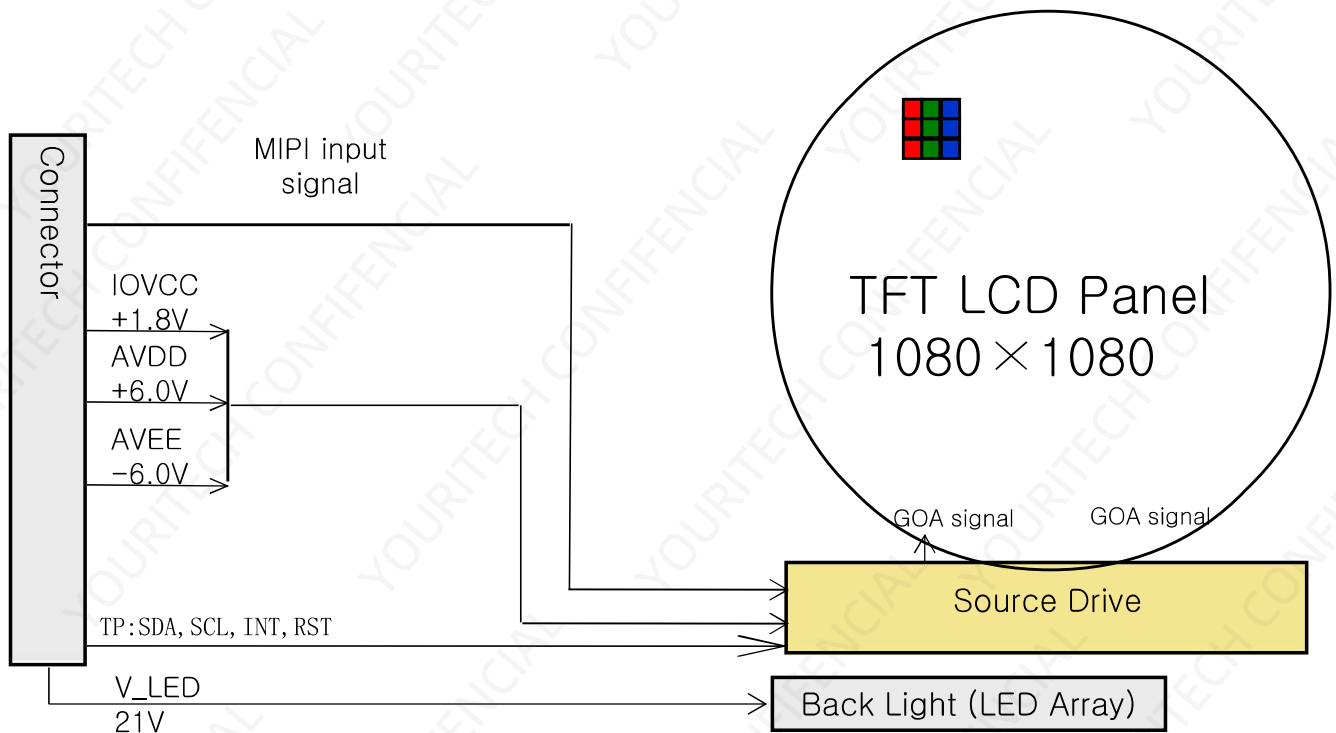
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1.0 GENERAL DESCRIPTION

1.1 Introduction

ET082CR01-GXT is a color active matrix a-Si LCD Single LCM using a-Si (amorphous silicon) TFTs (Thin Film Transistors) as an active switching devices. The module has a 8.2 inch diagonally measured active area with 1080×1080 resolutions (1080 horizontal by 1080 vertical pixel array). Each pixel is divided into RED, GREEN, BLUE dots which are arranged in vertical stripe and this module can display 16.7M colors.



1.2 Features

- PPI: 131
- Color Gamut: NTSC Typ53%, Min48%@C Light
- Thin Border
- RoHS Compliant

1.3 Application

- Robot



1.4 General Specification

The followings are general specifications of the GV082YM0-E00-2000.

<Table 1. General Specifications>

[Ta= 25±2°C]

Parameter	Specification	Unit	Remark
Active Area	208.008(H) × 208.008 (V)	mm	Note 1.1
Dimensional Outline	219.30 ±0.3(H)×224.02±0.3(V)×4.0±0.20(D)	mm	
Border(L/R/U/D)	3.5/3.5/2.5/5.446	mm	
Number of Pixels	1080 (H)×1080 (V)	pixels	
Pixel Pitch	64.2(H)×3×192.6(V)	mm	
Pixel Arrangement	RGB Vertical Stripe		
Color Gamut	48%(Min.), 53% (Typ.)		Only CF, Without OC @C Light
Display Colors	16.7M		
Display Mode	Normally Black		
Viewing Direction	80/80/80/80 (Min.) 85/85/85/85 (Typ.)	Deg.	CR>=10
Weight		gram	Note 1.2
IC	FT8201P		Note 1.3

Note 1.1: H: horizontal length, V: vertical length.

Note 1.2: This product's compatible IC is FT8201P ,Please contact IC manufacturer and vetify it when you choose any one of them.The information we suppose about IC just for reference.

Note 1.3: 1)Compatible ICs for this product FT8201P; 2)The BOE reliability test is based on F T8201P.



2. ABSOLUTE MAXIMUM RATINGS

The following are maximum values which, if exceeded, may cause faulty operation or damage to the unit.

Item	Symbol	Min.	Max.	Unit	Remark
Power Supply Voltage for I/O	VDD1.8	1.65	2.0	V	
Power Supply Voltage for				V	
Positive Voltage	VSP-	5.5 V	6.1	V	
Negative Voltage	VSN-	-6.V	-5.5	V	

Note1: If users use the product out off the environmental operation range (temperature and humidity) , it will have visual quality concerns.

3. ELECTRICAL CHARACTERISTICS

3.1 TFT LCD Power Supply Voltage

(GND=VSSA=VSSD=0V)

Ta=25°C

I/O Operating Voltage	DVDD1.8	1.7	1.8	1.9	V	
Operating Positive Voltage	AVDD	5.8	6.0	6.1	V	
Operating Negative Voltage	AVEE	-6.1	-6.0	-5.8	V	
Input Signal Voltage	VIH	0.7* VDD1.8	--	VDD1.8	V	
	VIL	GND	--	0.3* VDD1.8	V	
Output Signal Voltage	VOH	0.8* VDD1.8	--	VDD1.8	V	
	VOL	GND	--	0.2* VDD1.8	V	



3.2 TFT-LCD Current consumption (GND=VSSA=VSSD=0V)

Ta=25°C

ITEM	SYMBOL	Condition	MIN	TYPE	MAX	UNIT	NOTE
Current For Driving	I _{VDDI}	VDD1.8= 1.8V	-	30	35	mA	
	I _{AVDD}	AVDD = 5.9V	-	30	70	mA	
	I _{AVEE}	AVEE=-5.8		30	70	mA	
Total Power Consumption	PC		-	-	-	mW	Note1

Note1: Typ. specification: : Gray-level test Pattern

Max. specification: White test Pattern



(a)Gray-level Pattern



(b)White Pattern



3.3 Pin Assignment

<Figure 3. LCM Pin Pad>

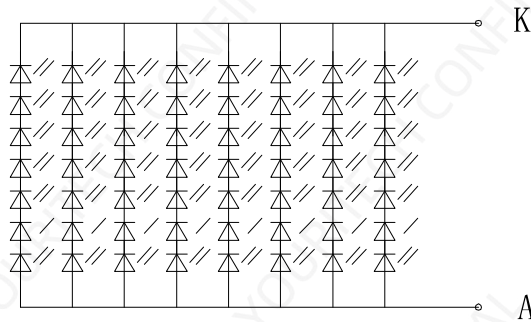
PIN No.	SYMBOL	Function
1	AVDD	Power supply
2	AVDD	Power supply
3	NC	NC
4	AVEE	Power supply
5	AVEE	Power supply
6	NC	NC
7	IOVCC 1.8V	I/O Power supply
8	IOVCC 1.8V	I/O Power supply
9	RESET-1.8V	Reset Signal pin ("Low" is enable)
10	GND	Ground
11	GND	Ground
12	MIPI_NO	DSI Data differential signal input pins. (Data lane0)
13	MIPI_OP	DSI Data differential signal input pins. (Data lane 0)
14	GND	Ground
15	MIPI_1N	DSI Data differential signal input pins. (Data lane 1)
16	MIPI_1P	DSI Data differential signal input pins. (Data lane 1)
17	GND	Ground
18	MIPI_CKN	DSI CLOCK differential signal input pins
19	MIPI_CKP	DSI CLOCK differential signal input pins
20	GND	Ground
21	MIPI_2N	DSI Data differential signal input pins. (Data lane 2)
22	MIPI_2P	DSI Data differential signal input pins. (Data lane 2)
23	GND	Ground
24	MIPI_3N	DSI Data differential signal input pins. (Data lane 3)
25	MIPI_3P	DSI Data differential signal input pins. (Data lane 3)
26	GND	Ground
27	ID0	
28	ID1	
29	GND	Ground
30	TP-SDA (1.8V)	TP-SDA
31	TP-SCL (1.8V)	TP-SCL
32	TP-INT (1.8V)	TP-INT
33	TP-RST (1.8V)	TP-RST
34	GND	Ground
35	NC	NC
36	LED-	Backlight LED Cathode
37	LED-	Backlight LED Cathode
38	NC	NC
39	LED+	Backlight LED Anode.
40	LED+	Backlight LED Anode.



3.4 Back-Light Unit

Table 4. LED Driver Electrical Specifications >

Parameter		Values			Unit	Notes
		Min.	Typ.	Max.		
BL Forward Voltage	V_F	-	21	23.8	V	Note 1 (7pcs Serial 8pcs Parallel.)
BL Forward Current	I_F	-	240	320	mA	
Power Consumption	P_{LED}					
LED Quantity	-	-	56	-	EA	
LED Life Time	N/A	30000	-	-	Hrs	IF=54mA Note 2



Backlight LED Circuit
LED 电路图 7串8并

Luminous intensity(9 AVG):

Module:400cd/m²(Min),500cd/m²(Typ)

Uniformity:80%(Min)

56LED= V_F :18.9V(Min);21.0V(Typ);23.8V(Max); I_F :240mA(Typ)

The color coordinates:

	MIN	TYP	MAX
x	0.28	0.31	0.34
y	0.29	0.32	0.35

Notes : 1. Power supply voltage21V for LED Driver

Calculator Value for reference $I_F \times V_F \times 56 / 85\%(\text{ efficiency}) = P_{LED}$

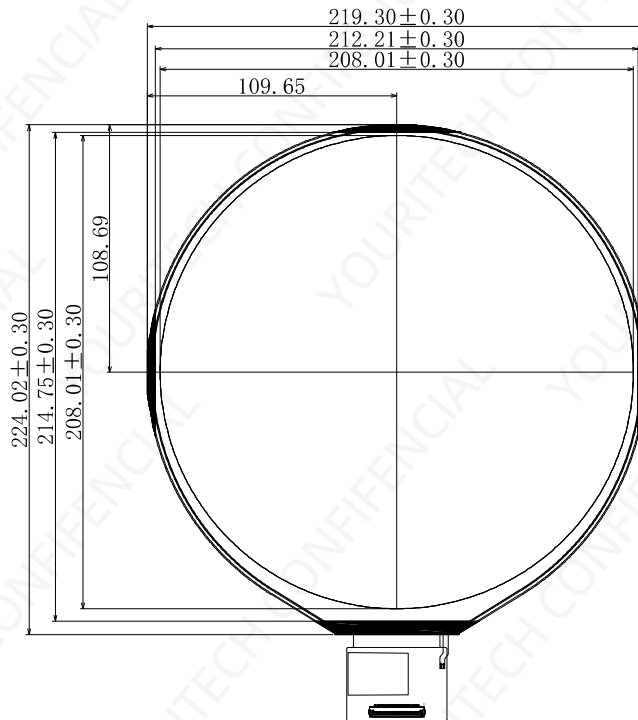
2. The LED Life-time define as the estimated time to 50% degradation of initial luminous.



3.5 APPENDIX

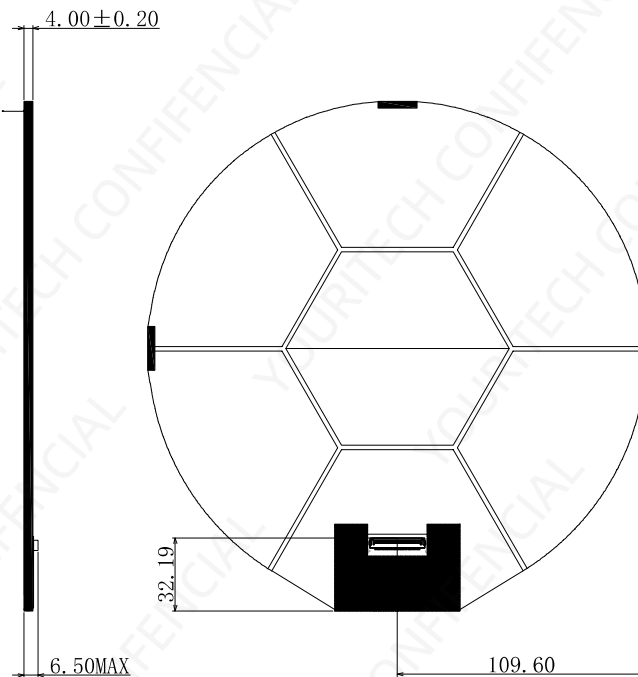
Mechanical Drawing

Drawing Attachment: Front



Mechanical Drawing

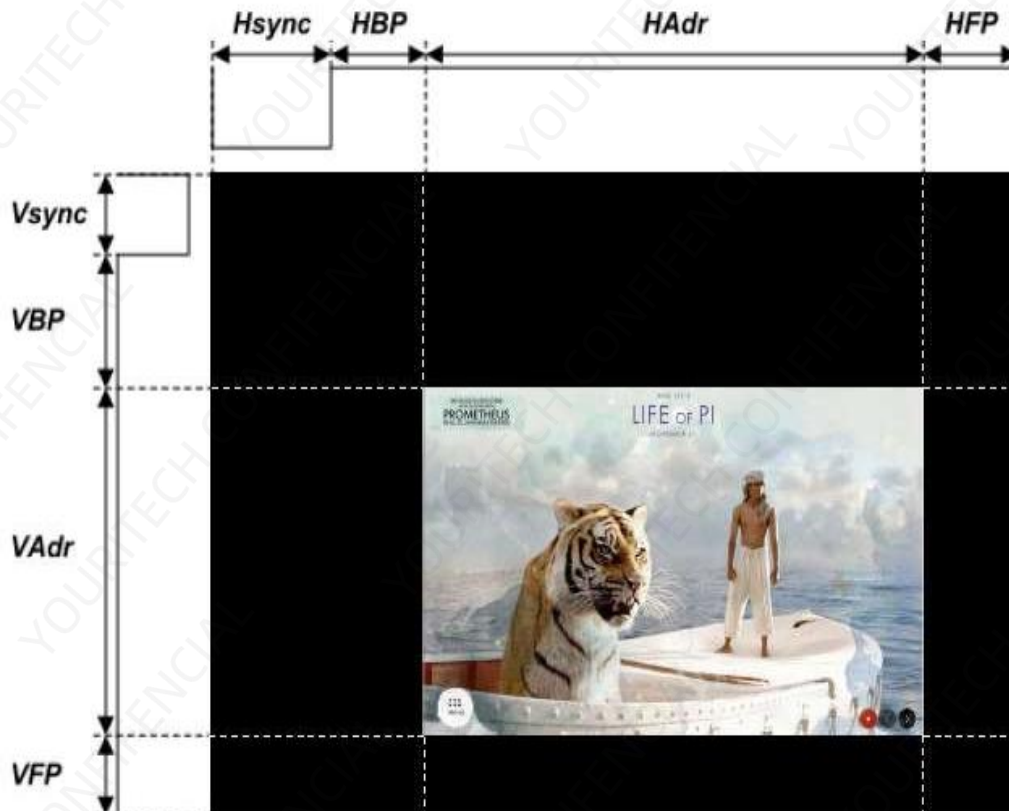
Drawing Attachment: Back



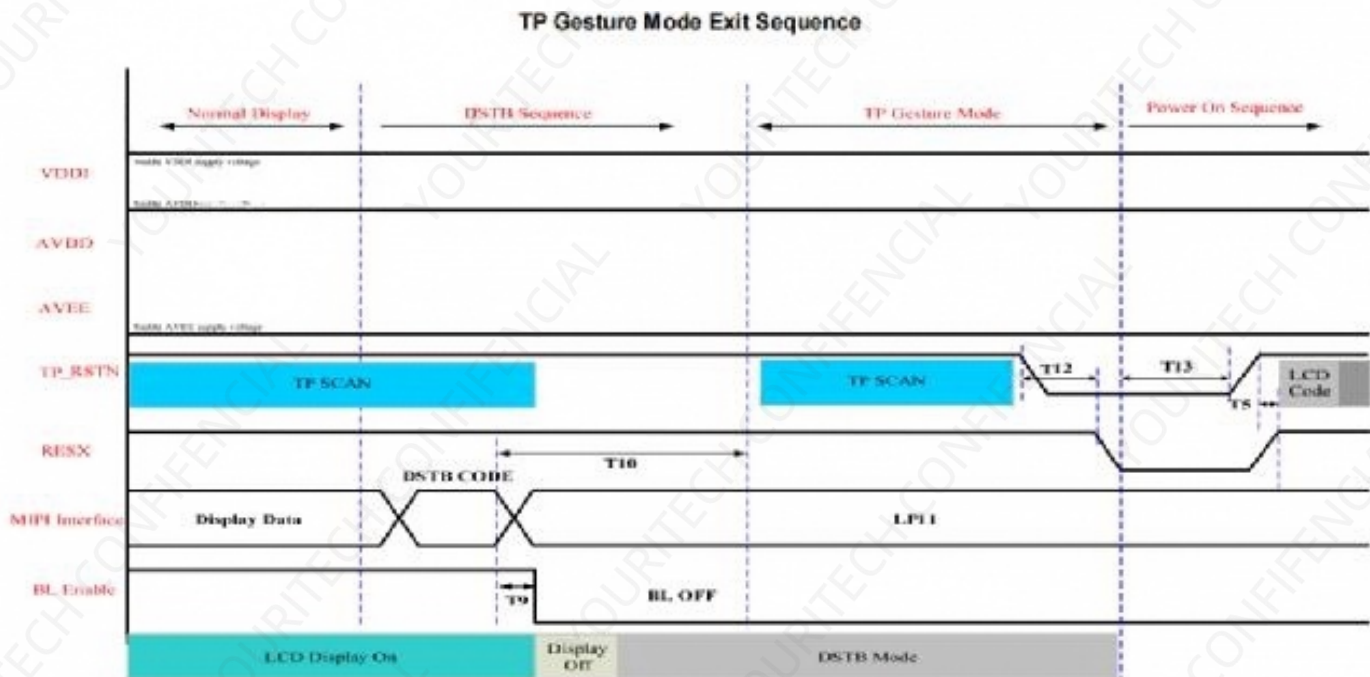
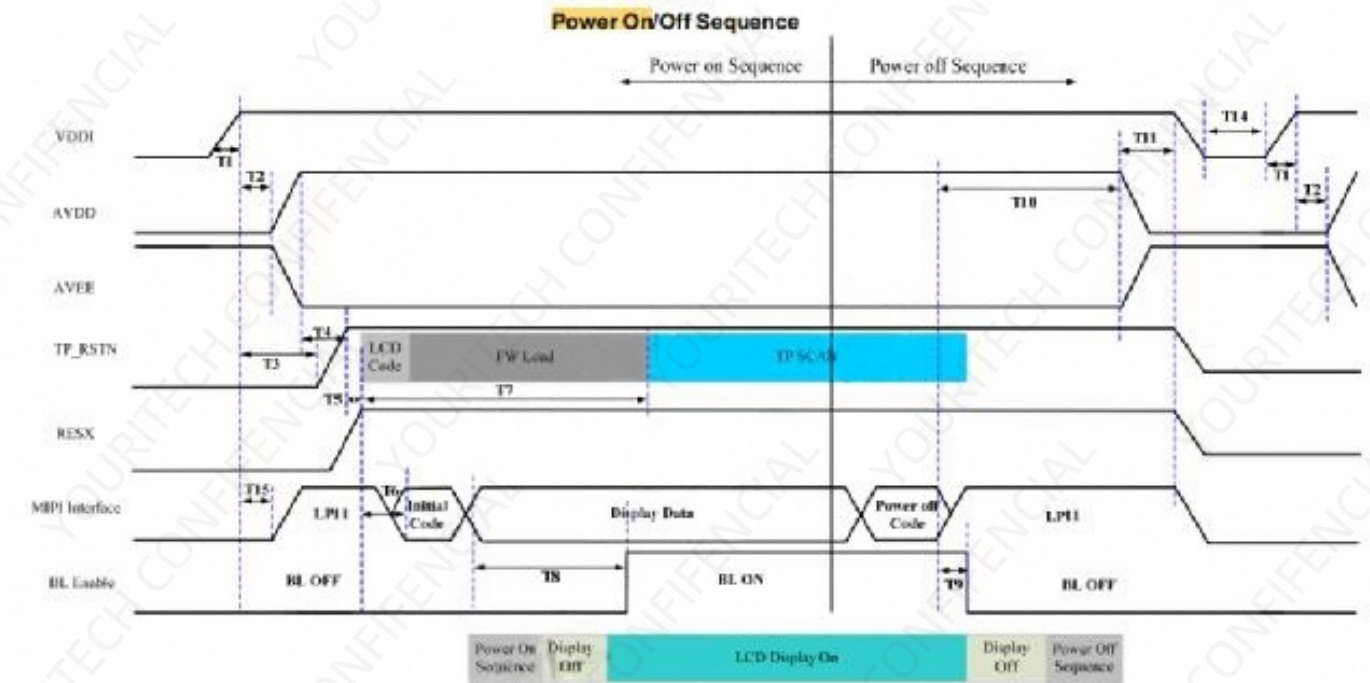
3.6 Interface timing Parameter and AC/DC Parameter

< Table5. MIPI Timing Parameter >

Input Timing	Symbol	1080RGBx1080			Unit
		Min.	Typ.	Max.	
PCLK Frequency	-	-	79		MHz
Horizontal Total	THT		1156		DCLK
Horizontal Synchronization	THS		8		DCLK
Horizontal Back Porch	THB		28		DCLK
Horizontal Address	THA		1080		DCLK
Horizontal Front Porch	THF		40		DCLK
Vertical Frequency	-		60		Hz
Vertical Total(1)	TVT		1308		THT
Vertical Synchronization	TVS		8		THT
Vertical Back Porch	TVB		38		THT
Vertical Address	TVA		1080		THT
Vertical Front Porch	TVF		180		THT



3.7 Power on/off sequence



Power On / Off Sequence Timing				
Parameter	Description	Min.	Max.	Unit
T1	Rise time from 0.1VDDI to 0.9VDDI	0	5	mS
T2	AVDD power up after VDDI power on	3		mS
T2d	AVEE power up after AVDD power up	0		mS
T3	TP reset time after VDDI power on	5		mS
T4	TP Reset release time after AVDD power on	100		uS
T5	TP Reset release to LCD Reset release	0		mS
T6	FLASH download LCD code after LCD Reset	35		mS
T7	LCD Reset release to TP SCAN Start	220		mS
T8	LED On after Initial Code	150		mS
T9	LED Off after power off code	50		mS
T10	AVEE power down after power off code	150		mS
T10d	AVDD power down after AVEE power down	0		mS
T11	VDDI power down after AVDD power off	5		mS
T12	TP reset time before LCD reset	5		mS
T13	RESX reset falling to TP reset release	5	120	mS
T14	VDDI rise again after previous VDDI powered down	50		mS
T15	MIPI signals start (Hi-Z/GND to LP11) after VDDI power on	3		mS



4.0 OPTICAL SPECIFICATIONS

4.1 Overview

The test of optical specifications shall be measured in a dark room (ambient luminance <1lux and temperature= $25\pm 2^{\circ}\text{C}$) with the equipment of luminance meter system (Goniometer system and TOPCON BM-5) and test unit shall be located at an approximate distance 50cm from the LCD surface at a viewing angle of θ and Φ equal to 0° . We refer to $\varnothing=0$ ($=\theta_3$) as the 3 o'clock direction (the "right"), $\varnothing=90$ ($=\theta_{12}$) as the 12 o'clock direction ("upward"), $\varnothing=180$ ($=\theta_9$) as the 9 o'clock direction ("left") and $\varnothing=270$ ($=\theta_6$) as the 6 o'clock direction ("bottom"). While scanning θ and/or $\varnothing$, the center of the measuring spot on the Display surface shall stay fixed.

The backlight should be operating for 30 minutes prior to measurement.

Backlight : BEF*2 , 上BEF 90° , 下BEF 0°

LED: KSF BLU

POL: Front HC POL(0°) + Rear Clear POL(90°).

4.2 Optical Specifications

<Table 5. Optical Specifications>

[Ta= $25\pm 2^{\circ}\text{C}$]

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Angle Range	Horizontal	Θ_3	CR > 10	80	85	-	Deg.	25°C, Note 4.1
		Θ_9		80	85	-	Deg.	
	Vertical	Θ_{12}		80	85	-	Deg.	
		Θ_6		80	85	-	Deg.	
Contrast Ratio		CR	$\Theta = 0^\circ$	1000	1200	-		Center, Perpendicular, Before WPC, BEF*2, Note 4.2
Cell Transmittance		Tr		3.8	4.3	-	%	E-mode,上BEF90° , Note 4.3
Reproduction of color		Rx	$\Theta = 0^\circ$	Typ- 0.015	0.619	Typ+ 0.015		Only CF, Without OC, @C Light Note 4.4
		Ry			0.320			
		Gx			0.298			
		Gy			0.549			
		Bx			0.145			
		By			0.134			
		Wx			0.301			
		Wy			0.327			
Color Gamut			$\Theta = 0^\circ$	48	53	-	%	Only CF,Without OC, @C Light

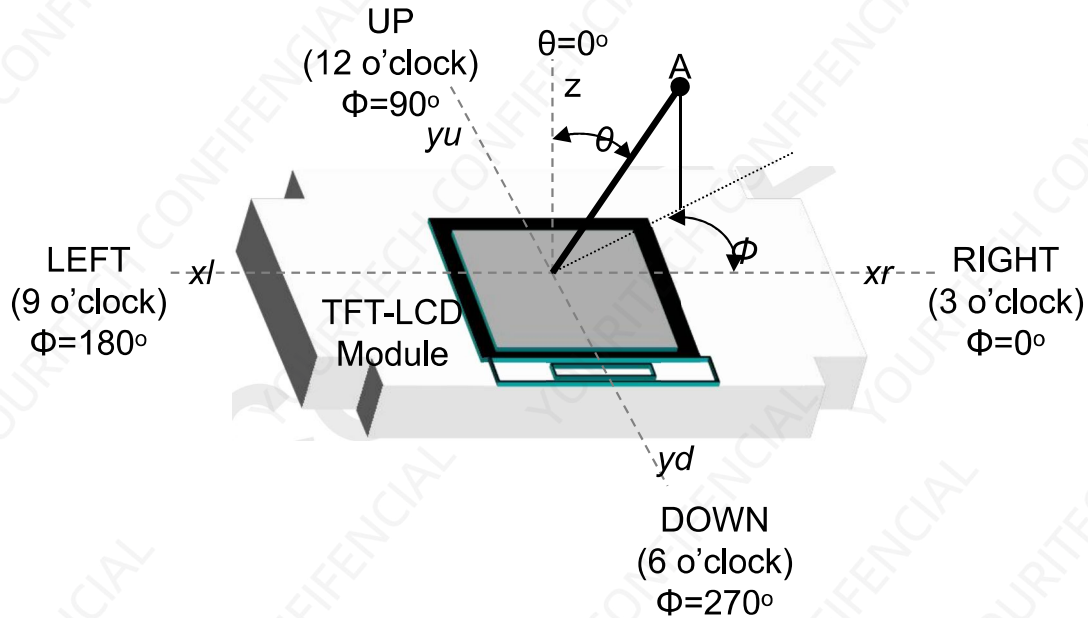


<Table 5. Optical Specifications>

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Response Time (Rising+Falling)	Tr+Tf	Ta= 25° C Θ = 0°	-	30	35	ms	Tr+Tf, 90%W/10%B, Note 4.5
Cross Talk		25° C	-	-	2.0	%	
Flicker			-	-	15	%	Flicker Pattern
Gamma			1.9	2.2	2.5		

Note 4.1: Viewing angle is the angle at which the contrast ratio is greater than 10. The viewing angles are determined for the horizontal or 3, 9 o'clock direction and the vertical or 6, 12 o'clock direction with respect to the optical axis which is normal to the LCD surface (see Figure 8).

<Figure 8. Viewing Angle Range Is Defined As Follows>



Note 4.2: Contrast measurements shall be made at viewing angle of $\Theta=0^\circ$ and at the center of the LCD surface. Luminance shall be measured with all pixels in the view field set first to white, then to the dark (black) state. Luminance Contrast Ratio (CR) is defined mathematically.

$$CR = \frac{\text{Luminance when displaying a white raster}}{\text{Luminance when displaying a black raster}}$$

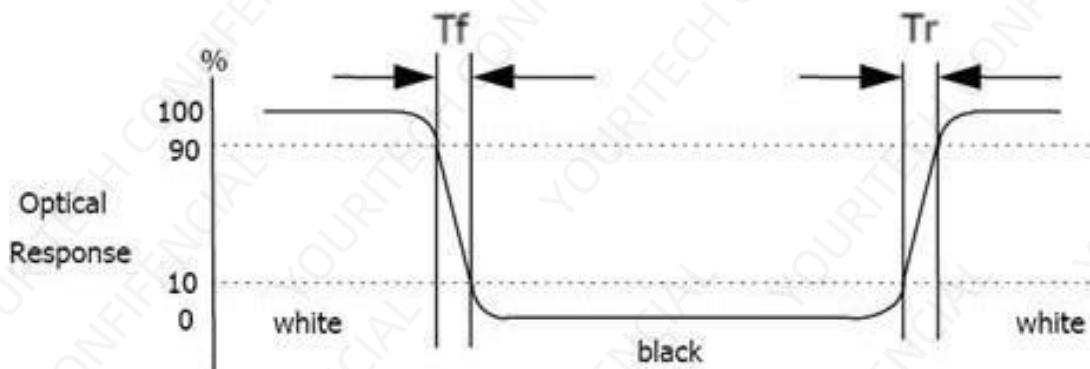
Note 4.3: Transmittance is the Value with Polarizer and KSF BLU, and the absorption axis of CF POL is 0° , the degree of up BEF is 90° .

Note 4.4: The color chromaticity coordinates specified in Table 5 shall be calculated from the spectral data measured with all pixels first in red, green, blue and white. Measurements shall be made at the center of the panel.



Note 4.5: The electro-optical response time measurements shall be made as Figure 9 by switching the “data” input signal ON and OFF. The times needed for the luminance to change from 10% to 90% is T_r , and 90% to 10% is T_f .

<Figure 9. Response Time Testing>



5.0 RELIABILITY

<Table 7. Reliability Test Parameters>

No	Items	Conditions	Remark
1	High Temperature Storage test(HTS)	80°C, 240hrs, Non-operational	Note 6.1
2	Low Temperature Storage test(LTS)	-30°C, 240hrs, Non-operational	
3	High Temperature Operating test(HTO)	70°C, 240hrs, operational	
4	Low Temperature Operating test(LTO)	-20°C, 240hrs, operational	
5	Thermal Humidity Operating test(THO)	60°C/90%RH, 240hrs, operational	
6	High temperature & high humidity Storage test(THS)	60°C/90%RH, 240hrs, Non-operational	
7	Thermal Cycle Storage test(TST)	-30°C(30min)~+80°C(30min), 100cycles, Non-operational	
8	Image Sticking(I/S)	Burn in 5*5 chess board 1h@25°C Inspection @ L127, perpendicular view ,the mura disappeared after 5s	
9	ESD test	接触±4kV , 空气±8kV, CLASS B	整机实验, 单体不做, 配合改善

Note 6.1: The test result shall be evaluated after the sample has been left at room temperature and humidity for 2 hours. These defects can't be accepted: 1. Air bubble 2. Seal leak 3. Non-display 4. Missing segments 5. Glass crack. 6. The reliability test result is based on FT8201P IC



6.0 PACKING

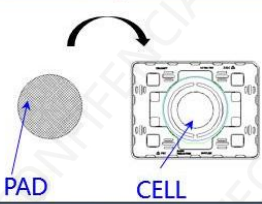
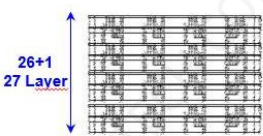
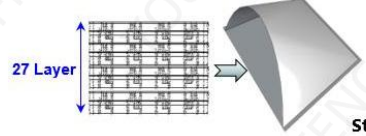
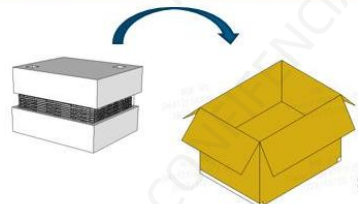
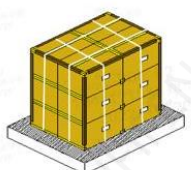
6.1 Outer Box Label Format

<Figure 14. Outer Box Label Format>



6.2 Packing Procedure

<Table 8. Packing Procedure>

Place 1 EPE PAD in the Tray, place the CELL on the EPE PAD, and place 1 EPE PAD in the tray.	Put 26 full Tray with CELL , Put 1 dummy Tray on the top. (Stack directly)	Put 27 Tray into 1 Shielding Bag .
1 CELL/2 PAD/1 Tray	26 CELL/27 Tray	26 CELL/Shielding Bag
 PAD CELL Step 1	 26+1 27 Layer Step 2	 27 Layer Step 3
Put 2 Cushion & 11 Tray into 1 Box sealing box with type "H" .	Put 12 Box on pallet,2x2x3.	Put 8 Paper Corner , 3 layers stretch film wind 5 surface , belt pack with total 4 line , paste Label.
2 Cushion/Box ; 26 CELL/Box	12 Box/ Pallet	312 CELL/ Pallet
 Step 4	 Step 5	 Pallet Label Sticking Place Step 6



6.3 Notice

- ① The number of tray stacking layers is not more than 20 layers within the production line.
- ② Need to differentiate product placement direction and make sure that they are completely in the tray's slot when putted into the tray.
- ③ Use temperature of PET not higher than 50 °.
- ④ All packages are for one-off shipment only and can not be used for other purposes.
- ⑤ Ensure the appearance of the package is intact and Cleanliness is up to standard when use them. (Ensure no foreign body except packaging material debris)
- ⑥ Do not press the location of tray or boxes where put products. (Prevent product crushing due to the deformation of Packaging)
- ⑦ Make sure the trays are placed in the right direction. (Straight Stack or Rotation Stack)
- ⑧ Ensure that the shielding bag's vacuum degree is up to standard (Prevent leakage or over-tightening)
- ⑨ Ensure that the inner packing is placed in the right direction (Prevent tray inversion)
- ⑩ Fill the same floor with empty boxes when the number of products delivered is less than one pallet.



7.0 PRECAUTIONS

7.1 Handling

- (1) Use fingerstalls with soft gloves in order to keep display clean during the incoming inspection and assembly process.
- (2) You must mount a module using specified mounting holes (Details refer to the drawings).
- (3) Please make sure to avoid external forces applied to the Source FPC and D-IC during the process of handling or assembling the MDL set. If not, It causes panel damage or malfunction.
- (4) Note that LCD surfaces are very fragile and could be easily damaged. Do not touch, push or rub the exposed LCD surfaces with glass, tweezers or anything harder than HB pencil lead. And please do not rub with dust clothes with chemical treatment.
- (5) Do not pull or fold the source D-IC which connect the source FPC and the panel. Do not pull or fold the LED wire.
- (6) After removing the protective film, when the surface becomes dusty, please wipe gently with absorbent cotton or other soft materials like chamois soaks with alcohol or purified water. Do not strong polar solvent because they cause chemical damage to the LCD surface.
- (7) Wipe off saliva or water drops as soon as possible. Their long time contact with LCD surface causes deformations and color fading.
- (8) Protection film for LCD surface on the module shall be slowly peeled off just before use so that the electrostatic charge can be minimized.
- (9) Since the LCD is made of glass, do not apply strong mechanical impact or static load onto it. Handling with care since shock, vibration, and careless handling may seriously affect the product. If it falls from a high place or receives a strong shock, the glass may be broken.
- (10) Do not disassemble the module.
- (11) To determine the optimum mounting angle, refer to the viewing angle range in the specification for each model.
- (12) If the customer's set presses the main parts of the LCD, the LCD may show the abnormal display. But this phenomenon does not mean the malfunction of the LCD and should be pressed by the way of mutual agreement.
- (13) Do not drop water or any chemicals onto the LCD's surface.
- (14) The ITO pad area needs special careful caution because it could be easily corroded. Do not contact the ITO pad area with HCFC, Soldering flux, Chlorine, Sulfur, saliva or fingerprint. To prevent the ITO corrosion, customers are recommended that the ITO area would be covered by UV or silicon.



7.2 Operating Precautions

- (1) Be careful for condensation at sudden temperature change. Condensation makes damage to LCD surface or electrical contacted parts. And after fading condensation, smear or spot will occur.
- (2) Module has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods may be important to minimized the interference.
- (3) The electrochemical reaction caused by DC voltage will lead to LCD degradation, so DC drive should be avoided.
- (4) The LCD modules use C-MOS LSI drivers, so customers are recommended that any unused input terminal would be connected to Vdd or Vss, do not input any signals before power is turn on, and ground you body, work/assembly area, assembly equipment to protect against static electricity.
- (5) Do not exceed the absolute maximum rating value. (supply voltage variation, input voltage variation, variation in part contents and environmental temperature, and so on) Otherwise the Module may be damaged.
- (6) Do not connect or disconnect the cable to/ from the module at the "Power On" condition.
- (7) When the module is operating, do not lose MIPI(SPI/MCU8080) , power. If any one these input is lost, the LCD panel would be damaged.
- (8) Obey the supply voltage sequence. If wrong sequence is applied, the module would be damaged.
- (9) Do not re-adjust variable resistor or switch etc.

7.3 Electrostatic Discharge Control

- (1) Since a module is composed of electronic circuits, it is not strong to electrostatic discharge. Make certain that treatment persons are connected to ground through wrist band etc. And don't touch interface pin directly. Keep products as far away from static electricity as possible.
- (2) Avoid the use work clothing made of synthetic fibers. We recommend cotton clothing or other conductivity-treated fibers.

7.4 Precautions for Strong Light Exposure

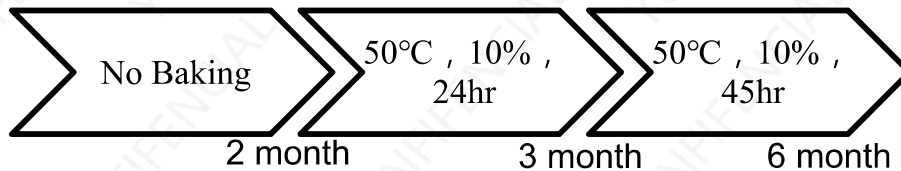
Strong light exposure causes degradation of LCD surface and color filter. It is not allowed to store or run directly in strong light or in high temperature and humidity for a long time.



7.5 Storage Precautions

When storing modules as spares for a long time, the following precautions are necessary.

- (1) The LCD surface should not come in contact with any other object.
It is recommended that they be stored in the container in which they were shipped.
Temperature : 5 ~ 40 °C.
- (2) Humidity : 35 ~ 75 %RH/
- (3) Period : 6 months/
- (4) Control of ventilation and temperature is necessary.
- (5) Please make sure to protect the product from strong light exposure, water or moisture. Be careful for condensation.
- (6) Store in a polyethylene bag with sealed so as not to enter fresh air outside in it.
- (7) Do not store the LCD near organic solvents or corrosive gasses.
- (8) Please keep the modules at a circumstance shown below Fig.



7.6 Operation Condition Guide

- (1) Normal operating condition
 - Temperature: 0 ~ 40°C
 - Operating Ambient Humidity : 10 ~ 90 %
 - Display pattern: dynamic pattern (Real display)
- (2) Black image or moving image is strongly recommended as a screen save.
- (3) Lifetime in this spec. is guaranteed only when Commercial Display is used according to operating usages.
- (4) Please contact BOE in advance when you display the same pattern for a long time.
- (5) If the Module keeps displaying the same pattern for a long period of time, the image may be "sticked" to the screen. To avoid image sticking, it is recommended to use a screen saver.
- (6) Do not exceed the absolute maximum rating value. (supply voltage variation, input voltage variation, variation in part contents and environmental temperature, and so on) Otherwise the Module may be damaged.
- (7) Dew drop atmosphere should be avoided.
- (8) The storage room should be equipped with a good ventilation facility, which has a temperature controlling system.
- (9) When expose to drastic fluctuation of temperature (hot to cold or cold to hot) ,the LCD may be affected; Specifically, drastic temperature fluctuation from cold to hot ,produces dew on the LCD's surface which may affect the operation of the LCD surface and the LCD.



- (10) Response time will be extremely delayed at lower temperature than the operating temperature range and on the other hand at higher temperature LCD may turn black at temperature above its operational range. However those phenomena do not mean malfunction or out of order with the LCD. The LCD will revert to normal operation once the temperature returns to the recommended temperature range for normal operation.

7.7 Others

- (1) When returning the module for repair or etc., Please pack the module not to be broken. We recommend to use the original shipping packages.
- (2) In order to prevent potential problems, flicker should be adjusted by optimizing the Vcom value in customer LCM Line.
- (3) (2) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, legs or clothes, it must be washed away thoroughly with soap.
- (4) For the crash damaged or unnecessary LCD, it is recommended to wash off liquid crystal by either of solvents such as acetone and ethanol and should be burned up later.
- (5) If you should swallow the liquid crystal, first, wash your mouth thoroughly with water, then drink a lot of water and induce vomiting, and then, consult a physician.
- (6) If the liquid crystal should get in your eyes, flush your eyes with running water for at least fifteen minutes.

