

IIDWay Technology Co. Ltd

PRODUCT SPECIFICATIONS

For Customer: _____

: APPROVAL FOR SPECIFICATION

Customer Model No. _____

: APPROVAL FOR SAMPLE

Module No.: GZ70140-DIT101WX

Date : 2023.9.11

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For Customer's Acceptance:

Approved By	Comment

PREPARED	CHECKED	APPROVER
YZJ		

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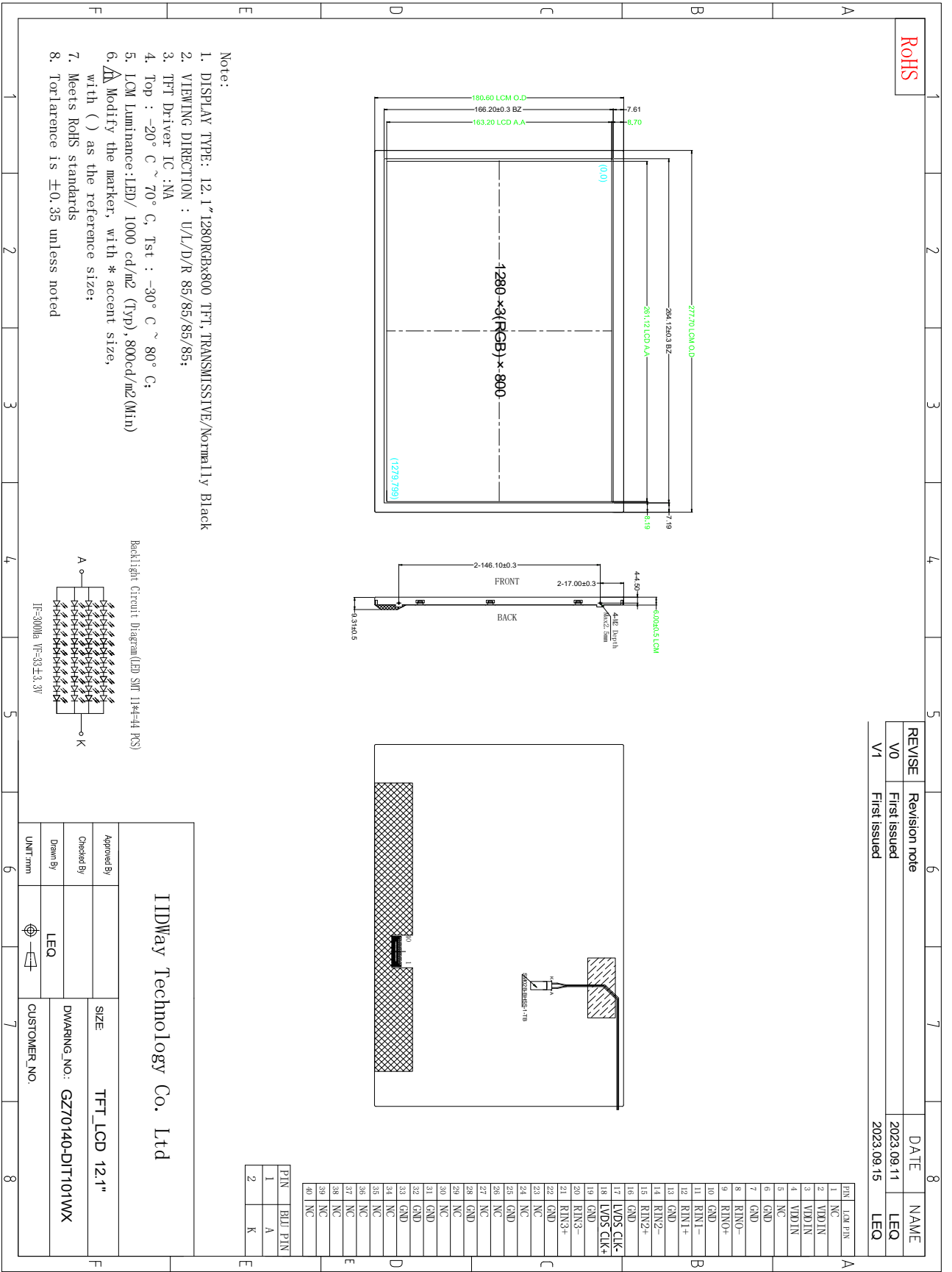
3. General Specifications

GZ70140-DIT101WX is a TFT-LCD module. It is composed of a TFT-LCD panel, driver IC, FPC, a back light unit. The 12.1" display area contains 1280x800 pixels and can display up to 16.7M colors. This product accords with RoHS environmental criterion.

Parameter	Specification	Unit	Remarks
Active Area	261.120 (H) × 163.2(V)	mm	
Number Of Pixels	1280(H) × 800(V) (1 pixel = R + G + B dots)	pixels	
Pixel Pitch	0.204(H) × 0.204(V)	mm	
Pixel Arrangement	RGB Vertical stripe		
Display Mode	Normally Black		
Display Colors	16.7M	colors	
Surface Treatment	AG42		
Contrast Ratio	1200 typ		
Viewing Angle(CR>10)	U/D/L/R Typ: > 85/85/85/85	deg.	
Response Time	30typ/35max	ms	
Color Gamut	NTSC 72%typ		
Transmittance	Typ. 5.0%	%	
Power Consumption	1.122	W	
Outline Dimension	269.12±0.15X173±0.15X1.34±0.10	mm	
Weight	1410	g	
Back-light	Edge side, 1-LED Lighting Bar Type		

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4.Outline.Drawing



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5. Absolute Maximum Ratings($T_a=25\text{ }^\circ\text{C}$)

5.1 Electrical Absolute Maximum Ratings.($V_{SS}=0\text{V}$, $T_a=25\text{ }^\circ\text{C}$)

Item	Symbol	Min.	Max.	Unit	Note
Power Supply Voltage	V_{DD}	-0.3	3.6	V	1, 2

Notes:

1. If the module is above these absolute maximum ratings. It may become permanently damaged. Using the module within the following electrical characteristic conditions are also exceeded, the module will malfunction and cause poor reliability.
2. $V_{DD} > V_{SS}$ must be maintained.
3. Please be sure users are grounded when handing LCD Module.

5.2 Environmental Absolute Maximum Ratings.

Item	Storage		Operating	
	MIN.	MAX.	MIN.	MAX.
Ambient Temperature	$-30\text{ }^\circ\text{C}$	$80\text{ }^\circ\text{C}$	$-20\text{ }^\circ\text{C}$	$70\text{ }^\circ\text{C}$
Humidity	-	-	-	-

1. The response time will become lower when operated at low temperature.
2. Background color changes slightly depending on ambient temperature.

The phenomenon is reversible.

3. $T_a \leq 40\text{ }^\circ\text{C}$: 85%RH MAX.

$T_a > 40\text{ }^\circ\text{C}$: Absolute humidity must be lower than the humidity of 85%RH at $40\text{ }^\circ\text{C}$.

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6. Electrical Specifications and Instruction Code

6.1 Electrical characteristics($V_{SS}=0V, T_a=25^\circ C$)

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Power supply	VDD	$T_a=25^\circ C$	3.0	3.3	3.6	V	
Input voltage	'H'	V_{IH}	$V_{DD}=3.3V$	$0.7V_{DD}$	-	V_{DD}	V
	'L'	V_{IL}	$V_{DD}=3.3V$	0	-	$0.3V_{DD}$	V

Note: If one of the above items is exceeded its maximum limitation momentarily, the quality of the product may be degraded. Absolute maximum limitation, therefore, specify the values exceeding which the product may be physically damaged. Be sure to use the product within the recommend range.

6.2 LED backlight specification($V_{SS}=0V, T_a=25^\circ C$)

Item	Symbol	Condition	Min	Typ	Max	Unit	Note
Supply voltage	VLED	$I_f=300mA$	29.7	33	36.3	V	
Uniformity	ΔBp	$I_f=300mA$	75	-	-	%	

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6.3 Interface signals

6.3.1 LCM PIN

Pin No.	Symbol	Function
1	NC	No Connection.
2-4	VDD	Power Supply For LCD,VDD=3.3V.
5	NC	No Connection.
6-7	GND	Ground.
8	RIN0-	LVDSData differential signal input pins.
9	RIN0+	LVDS Data differential signal input pins.
10	GND	Ground.
11	RIN1-	LVDS Data differential signal input pins.
12	RIN1+	LVDS Data differential signal input pins.
13	GND	Ground.
14	RIN2-	LVDS Data differential signal input pins.
15	RIN2+	LVDS Data differential signal input pins.
16	GND	Ground.
17	LVDS_CLK-	LVDS CLOCK differential signal input pins.
18	LVDS_CLK+	LVDS CLOCK differential signal input pins.
19	GND	Ground.
20	RIN3-	LVDSData differential signal input pins.
21	RIN3+	LVDS Data differential signal input pins.
22	GND	Ground.
23-24	NC	No Connection.
25	GND	Ground.
26	SDA	Serial data input/output for I2C Interface.
27	SCL	Clock Input for I2C interface.
28	GND	Ground.
29-30	NC	No Connection.
31-33	GND	Ground.
34-40	NC	No Connection.

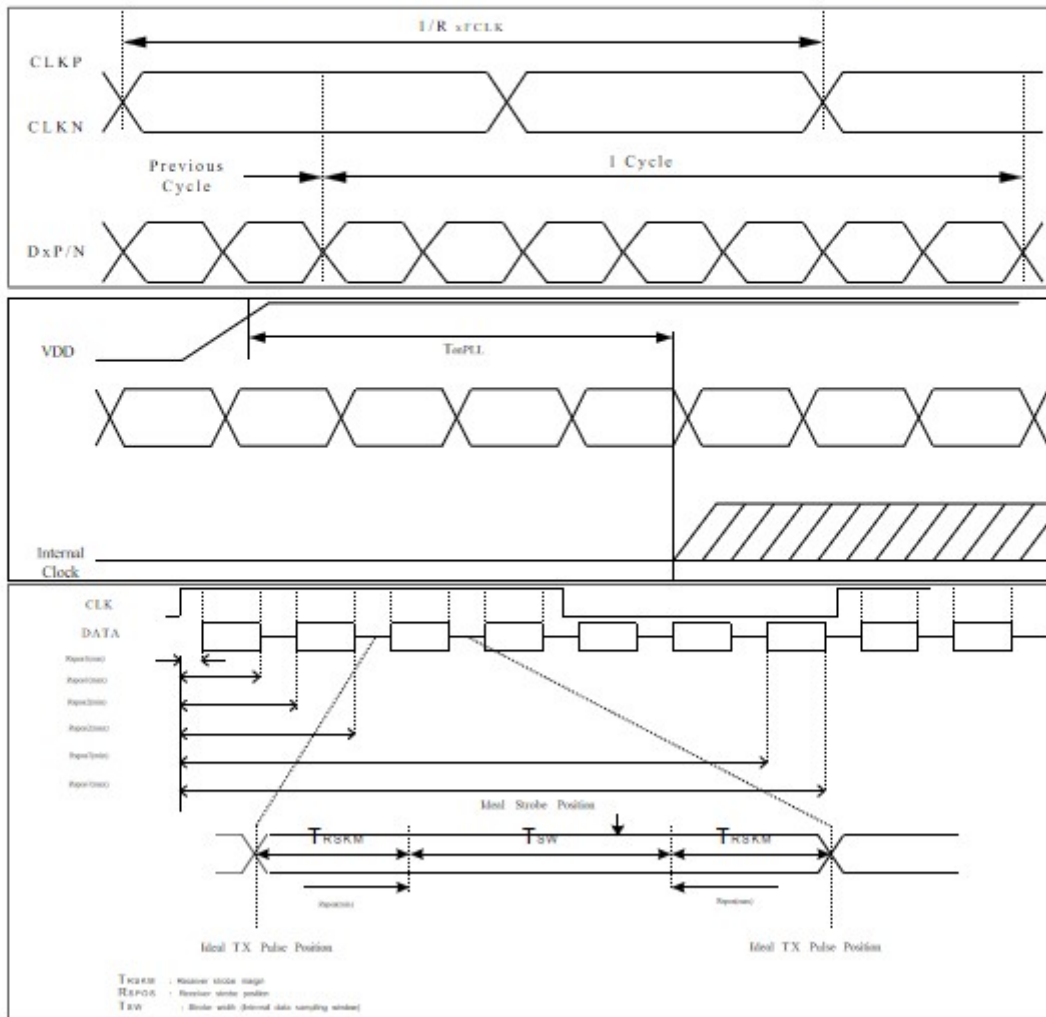
BLU PIN

Pin No.	Symbol	Function
1	A(33V)	LED back light(Anode)
2	K	LED back light(Cathode)

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6.5 AC Specification

Parameter	Symbol	Min	Typ	Max	Unit	Notes
LVDS Strobe Width	t_{SW}	200	-	-	ps	V _{cm} =1.2V VID = 200mV @81MHz
LVDS Receiver Skew Margin	t_{RSM}	500	-	-	ps	



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7. Optical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Note	
Brightness	Bp	$\theta=0^\circ$	-	1000	-	Cd/m ²	1	
Uniformity	Δ Bp	$\Phi=0^\circ$	75	-	-	%	1,2	
Viewing Angle	3:00	Cr \geq 10	-	85	-	Deg	3	
	6:00		-	85	-			
	9:00		-	85	-			
	12:00		-	85	-			
Contrast Ratio	Cr	$\theta=0^\circ$	1000	1200	-	-	4	
Response Time	T _r +T _f	$\Phi=0^\circ$	-	30	35	ms	5	
Color of CIE Coordinate	W	x	$\theta=0^\circ$	Typ-0 .05	TBD	Typ+0. 05	-	1,6
		y					-	
	R	x					-	
		y					-	
	G	x					-	
		y					-	
	B	x					-	
		y					-	
NTSC Ratio	S		68	72	-	%		

Note : The parameter is slightly changed by temperature, driving voltage and materiel

Note 1: The data are measured after LEDs are turned on for 5 minutes. LCM displays full white. The brightness is the average value of 9 measured spots. Measurement equipment BM-7 (Φ 5mm)

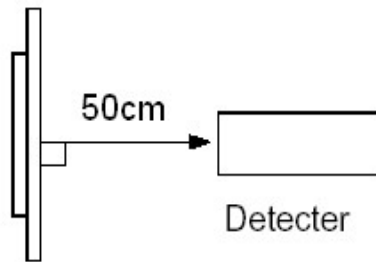
Measuring condition:

- *Measuring surroundings: Dark room.*
- *Measuring temperature: Ta=25 °C.*
- *Adjust operating voltage to get optimum contrast at the center of the display.*

Measured value at the center point of LCD panel after more than 5 minutes while backlight

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turning on.

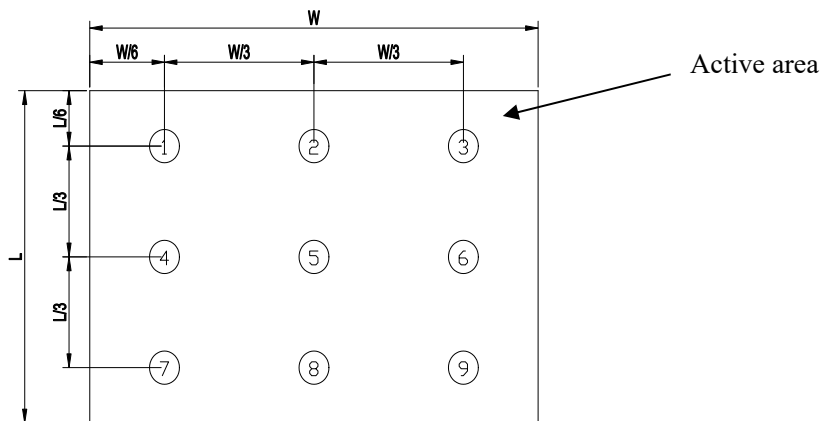


Note 2: The luminance uniformity is calculated by using following formula.

$$\Delta Bp = Bp (\text{Min.}) / Bp (\text{Max.}) \times 100 (\%)$$

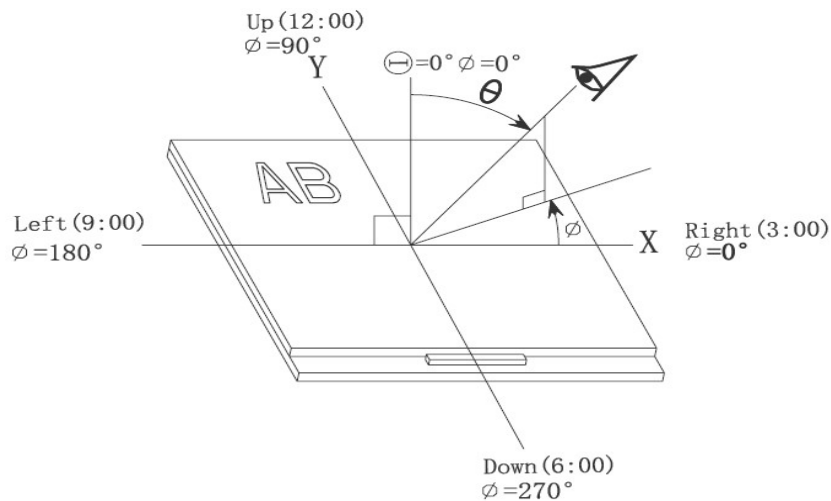
$Bp (\text{Max.})$ = Maximum brightness in 9 measured spots

$Bp (\text{Min.})$ = Minimum brightness in 9 measured spots.



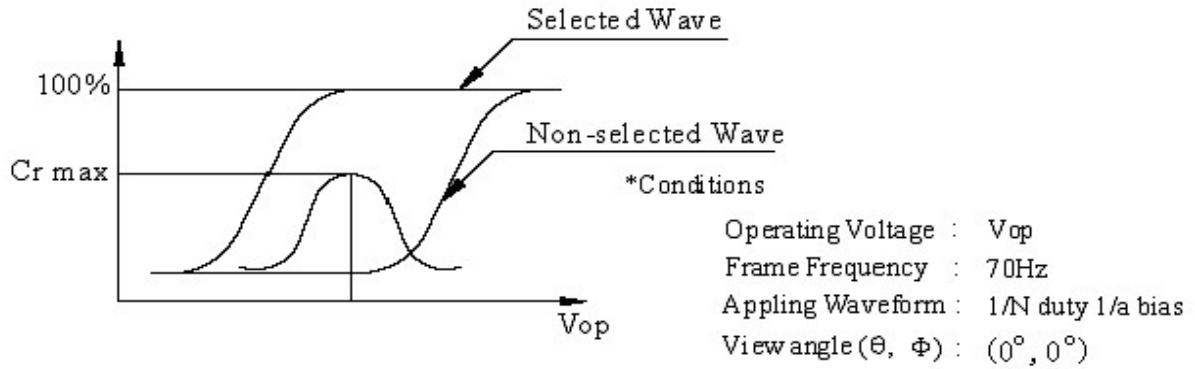
Note 3: The definition of viewing angle:

Refer to the graph below marked by ϑ and Φ



Note 4: Definition of contrast ratio.(Test LCD using DMS501)

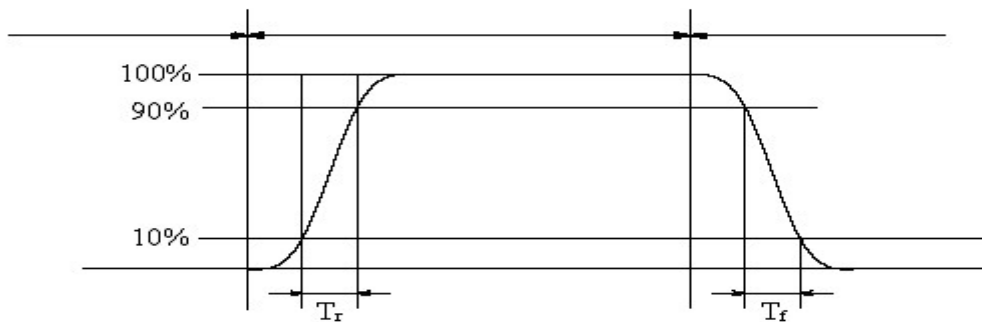
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$$\text{Contrast ratio}(Cr) = \frac{\text{Brightness of selected dots}}{\text{Brightness of non-selected dots}}$$

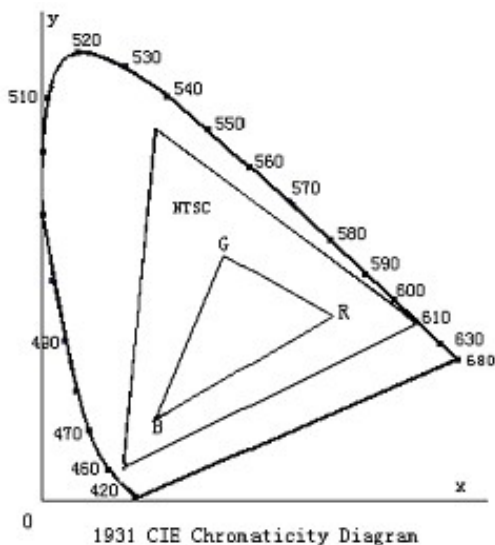
Note 5: Definition of Response time. (Test LCD using DMS501):

The output signals of photo detector are measured when the input signals are changed from "black" to "white"(falling time) and from "white" to "black"(rising time), respectively. The response time is defined as the time interval between the 10% and 90% of amplitudes. Refer to figure as below.



The definition of response time

Note 6: Definition of Color of CIE Coordinate and NTSC Ratio.



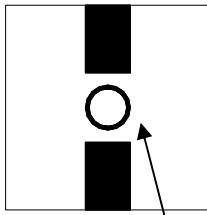
Color gamut:

$$S = \frac{\text{area of RGB triangle}}{\text{area of NTSC triangle}} \times 100\%$$

Note 7: Definition of cross talk.

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*Cross talk ratio(%)=|pattern A Brightness-pattern B Brightness|/pattern A Brightness*100*



Pattern A



Pattern B

Measurement point(center)

Electric volume value=3F+/-3Hex

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8. Reliability Test Items and Criteria

No	Test Item	Test condition	Criterion
1	High Temperature Storage	80°C±2°C 96H Restore 2H at 25°C Power off	1. After testing, cosmetic and electrical defects should not happen. 2. Total current consumption should not be more than twice of initial value.
2	Low Temperature Storage	-30°C±2°C 96H Restore 2H at 25°C Power off	
3	High Temperature Operation	70°C±2°C 96H Restore 2H at 25°C Power on	
4	Low Temperature Operation	-20°C±2°C 96H Restore 4H at 25°C Power on	
5	High Temperature/Humidity Operation	60°C±2°C 90%RH 96H Power on	
6	Temperature Cycle	-30°C → 80°C 30min 5min 30min after 5 cycle, Restore 2H at 25°C Power off	

Note: Operation: Supply 3.3V for logic system.

The inspection terms after reliability test, as below

ITEM	Inspection
Contrast	CR>50%
IDD	IDD<200%
Brightness	Brightness>60%
Color Tone	Color Tone+/-0,05

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9. Precautions for Use of LCD Modules

9.1 Handling Precautions

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

9.1.2 *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.*

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

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

9.1.5 *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 — Ketone — Aromatic solvents

9.1.6 *Do not attempt to disassemble the LCD Module.*

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

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

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

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

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

d. 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.

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9.2 Storage precautions

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

9.2.2 *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°C ~ 40°C

Relatively humidity: ≤80%

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

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

END