

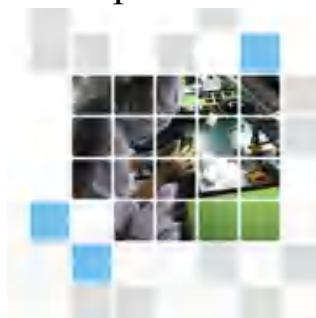
VICTRONIX	Add:	Room 1405A, Building 1B, Hua qiang Idea Park, Guang Ming District, ShenZhen,China		
	Tel:	+86-755-33265935	Fax:	+86-755-33265935

SPECIFICATION

VXT700WHA-02P

☐ Preliminary Specification

☐ Final Specification



CUSTOMER:

Made By:

Checked By:

Approved By:

Quality:

Date:

Note:

Approved By:

Date:

Note:

Date	Rev.No	Page	Revision Items	Prepared
2021-10-14	V0		The first release	SolonZhang

3. General Specifications

VXT700WHA-02P is a TFT-LCD module. It is composed of a TFT-LCD panel, driver IC, FPC,TP,a back light unit. The 7.0" display area contains 800 x 480 pixels and can display up to 16.7M colors. This product accords with RoHS environmental criterion.

Item	Contents	Unit	Note
LCD Type	TFT	-	
Display color	16.7M		
Viewing Direction	FREE	O'Clock	
Gray scale inversion direction	6	O'Clock	
Operating temperature	-20~+70	℃	
Storage temperature	-30~+80	℃	
Module size	Refer to outline drawing	mm	
Active Area(W×H)	152.4X91.44	mm	
Number of Dots	800x480	dots	
Controller	MOS_CHIP_G424A	-	
Power Supply Voltage	3.3	V	
Outline Dimensions	Refer to outline drawing	-	
Backlight	3*8-LEDs (white)	pcs	
Weight	---	g	
Interface	RGB Interface	-	

PIN	FUNCTION	SYMBOL
1	VLED	
2	VLED	
3	ANU	
4	GLED	
5	VLED	
6	VCC	
7	VCC	
8	MODE	
9	DE	
10	VS	
11	HS	
12	GND	
13	B5	
14	B4	
15	B3	
16	GND	
17	B2	
18	B1	
19	BO	
20	NC	
21	G5	
22	G4	
23	G3	
24	G2	
25	G1	
26	GND	
27	GND	
28	B3	
29	B2	
30	B1	
31	NC	
32	HS	
33	VS	
34	DE	
35	NC	
36	GND	
37	CLK	
38	NC	
39	VS	
40	V/D	

				DRAWN	TITLE	VXT700WHA-02P
				ME CHECKED		
				EE CHECKED		
				APPROVED		
VOO		First issue	SIGN	2021.09.09	CUSTOMER'S APPROVAL	
VER.	SYMBOL	AMENDMENT		DATE		
						VICTRONIX TECENSTAR INT'L CO., LTD

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

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

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. $V_{CC} > V_{SS}$ must be maintained.

5.2 Environmental Absolute Maximum Ratings.

Item	Storage		Operating		Note
	MIN.	MAX.	MIN.	MAX.	
Ambient Temperature	-30°C	80°C	-20°C	70°C	1,2
Humidity	-	-	-	-	3

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

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

6. Electrical Specifications and Instruction Code

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

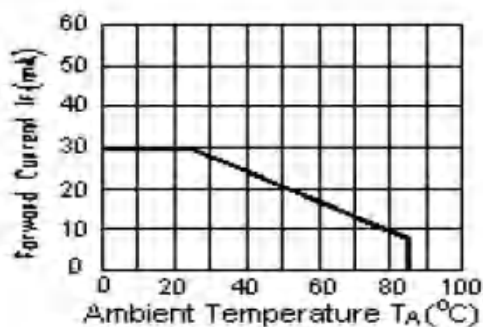
Parameter		Symbol	Condition	Min	Typ	Max	Unit	Note
Power supply		VDD	$T_a=25^{\circ}C$	3.0	3.3	3.6	V	
Input voltage	'H'	V_{IH}	VDD=3.3V	0.7VDD	-	VDD+0.3	V	
	'L'	V_{IL}	VDD=3.3V	0	-	0.3VDD	V	
Current Consumption		I_{DD1}	Normal mode	-	-	-	mA	1
		I_{DD2}	Sleep mode	-	-	-	mA	1
Clock Frequency		f_{CLK}	-	-	30	50	MHz	

Note:

1: Tested in 1×1 chessboard pattern.

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

Item	Symbol	Condition	Min	Typ	Max	Unit	Note
Supply voltage	V_f	$I_f=160mA$	-	5.0	5.5	V	
Uniformity	ΔB_p	$I_f=160mA$	75			%	
Luminance for LCD(w/o TP)	L_v	$I_f=160mA$	-	450		Cd/m ²	



6.3 Interface signals

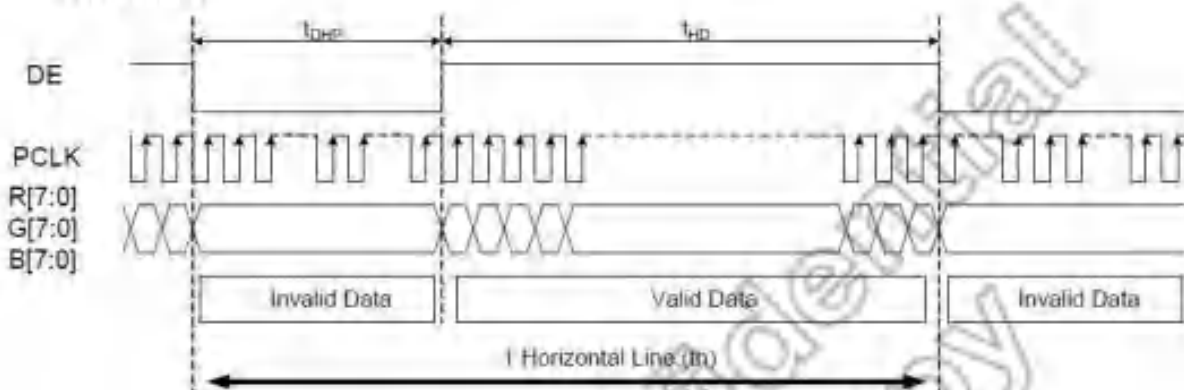
Pin No.	Symbol	I/O	Function
1	VLED	P	LED back light(Anode)
2			
3	ADJ	I	PWM Signal,1 for high luminance, 0 for low luminance
4	GLED	P	LED back light(Cathode)
5			
6	VCC	P	Power supply
7			
8	MODE	I	DE/YSNC mode select
9	DE	I	Data enable pin
10	VS	I	Frame sync signal
11	HS	I	Line sync signal
12	GND	P	Ground
13	B5	I	Blue data bus
14	B4		
15	B3		
16	GND	P	Ground
17	B2	I	Blue data bus
18	B1		
19	B0		
20	NC	-	No connection
21	G5	I	Green data bus
22	G4		
23	G3		
24	GND	P	Ground
25	G2	I	Green data bus
26	G1		
27	G0		
28	GND	P	Ground
29	R5	I	Red data bus
30	R4		
31	R3		

Pin No.	Symbol	I/O	Function
32	NC	-	No connection
33	R2	I	Red data bus
34	R1		
35	R0		
36			
37	DCLK	I	Clock signal
38	NC	-	No connection.
39	L/R	I	Right/Left sequence control of source driver
40	U/D	I	Gate driver Up/Down scan control of gate driver

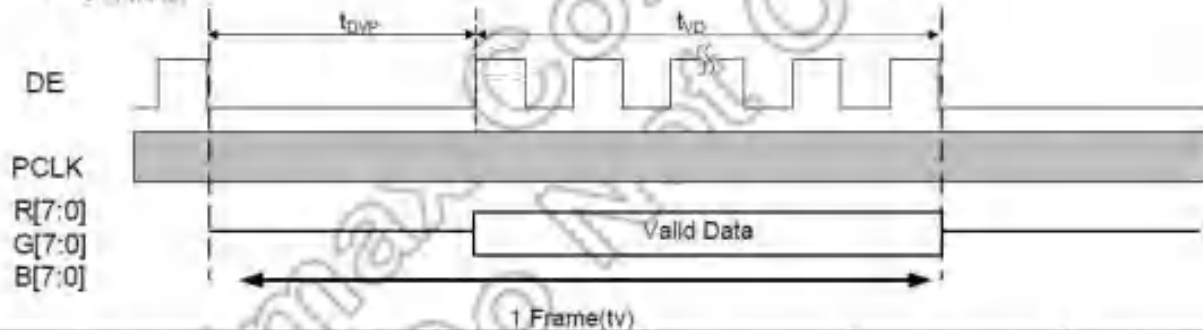
REF connector FH19-40S-0.5SH or EQU, face down

6.4 Parallel RGB AC Characteristics

• Horizontal



• Vertical



Parameter	Sym bol	Min.	Typ.	Max.	Unit
Clock Frequency	fdck	25.2	27.2	34.6	MHz
Horizontal valid data	Thd	800	800	800	clocks
1 horizontal line	Th	856	860	1100	clocks
Vertical valid data	Tvd	480	480	480	Th
1 vertical field	Tv	490	528	528	Th
V Frequency	fv	-	60	-	Hz

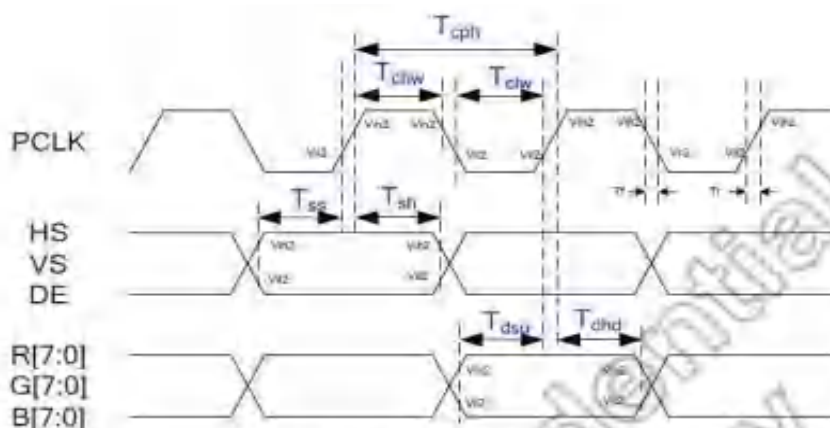


Figure 6.11: RGB Input timing

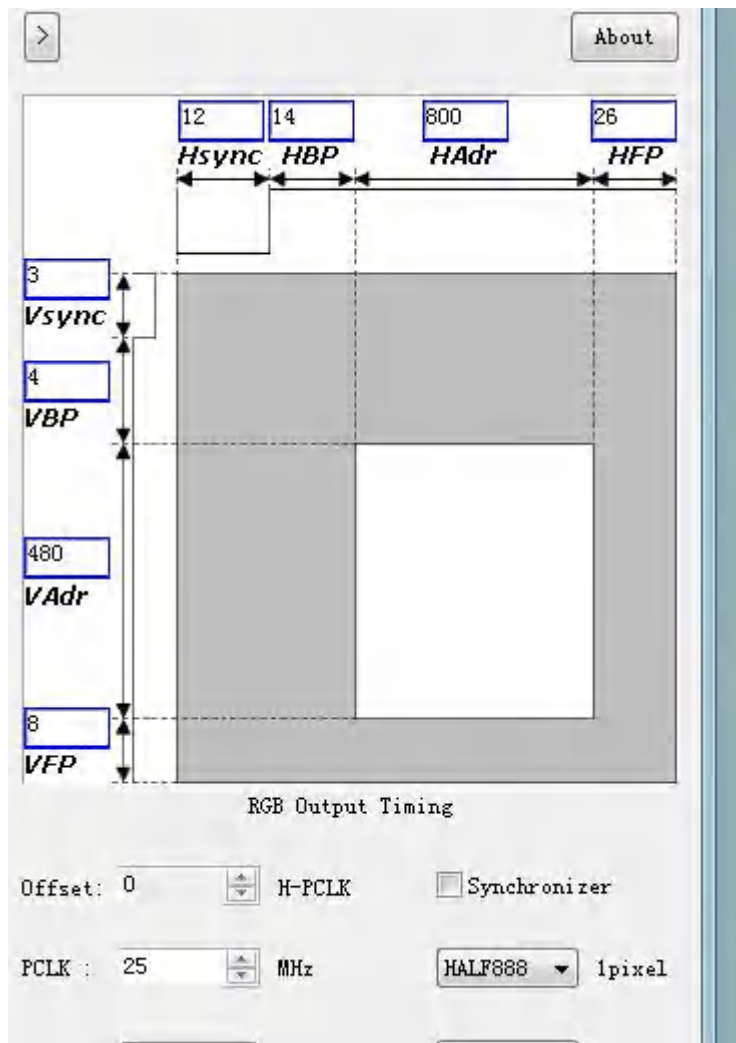
Input data/sync parameters in RGB interface

(VDDIO=1.65V to 3.6V, VDD1=2.6V to 3.6V, VDD2=2.6V to 3.6V, GND=0V, T_A=-40 to +95°C)

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
PCLK period	T _{cpl}	16.8	8+tr+tf	-	ns
PCLK clock high width	T _{cplh}	8	-	-	ns
PCLK clock low width	T _{cplw}	6	-	-	ns
VS setup time	T _{ss}	3	-	-	ns
VS hold time	T _{sh}	3	-	-	ns
HS setup time	T _{ss}	3	-	-	ns
HS hold time	T _{sh}	3	-	-	ns
DE setup time	T _{ss}	3	-	-	ns
DE hold time	T _{sh}	3	-	-	ns
Data setup time	T _{dsu}	3	-	-	ns
Data hold time	T _{dhd}	3	-	-	ns
Input signal rising time	T _r	-	-	20	ns
Input signal falling time	T _f	-	-	20	ns

Table 6.1: Input data/sync. parameters in RGB interface

REF setting



7. Optical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Brightness (Whit TP)	Bp	$\theta=0^\circ$ $\phi=0^\circ$	-	400	-	Cd/m ²	1
Uniformity	ΔBp		75	-	-	%	1,2
Viewing Angle	3:00	Cr $\geq$ 10	-	80	-	Deg	6
	6:00		-	80	-		
	9:00		-	80	-		
	12:00		-	80	-		
Contrast Ratio	Cr	$\theta=0^\circ$ $\phi=0^\circ$	800	1400		-	4
Response Time	T _r		-	-	30	ms	5
	T _f		-	-	-	ms	
Color of CIE Coordinate	W	x		-		-	7
		y		-		-	
	R	x		0.641		-	
		y		0.334		-	
	G	x		0.331		-	
		y		0.637		-	
	B	x		0.149		-	
		y		0.046		-	
NTSC Ratio	S		65	70	-	%	

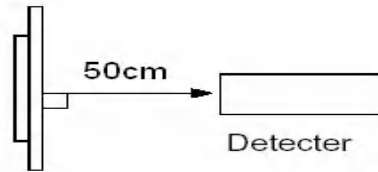
Note: The parameter is slightly changed by temperature, driving voltage and materiel

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 PR-705 (Φ8mm)

Measuring condition:

- Measuring surroundings: Dark room.
- Measuring temperature: Ta=25 ℃.
- 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 turning on.

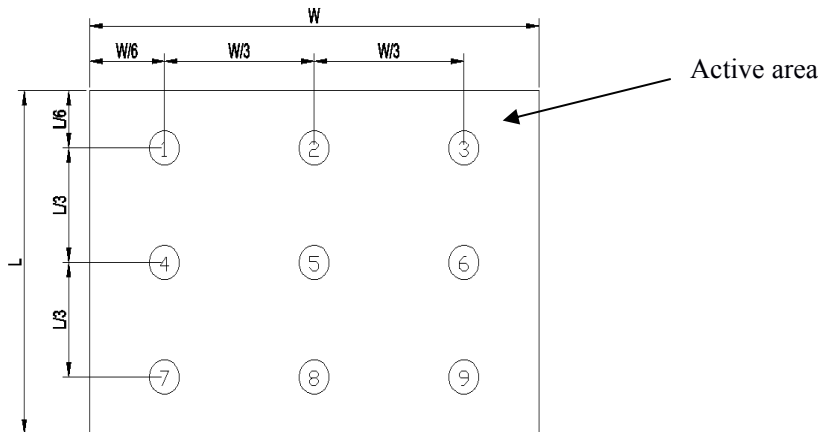


Note 2: The luminance uniformity is calculated by using following formula.

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

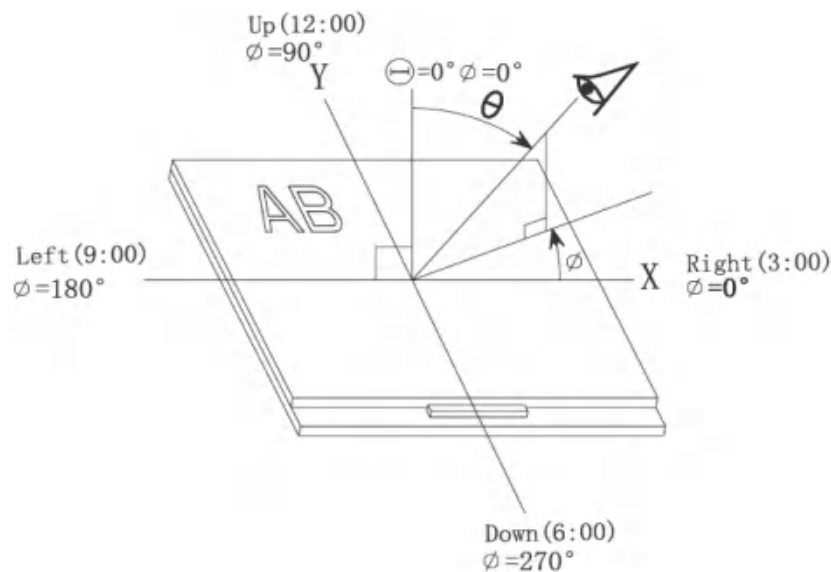
Bp (Max.) = Maximum brightness in 9 measured spots

Bp (Min.) = Minimum brightness in 9 measured spots.

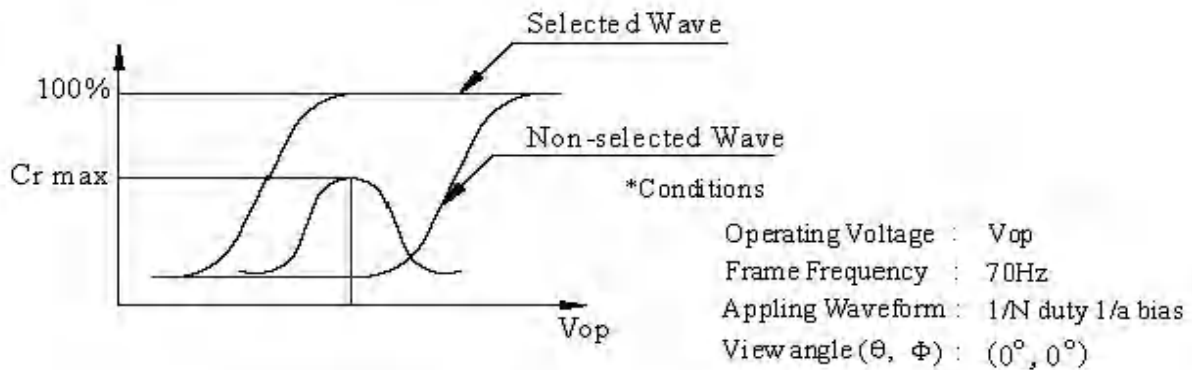


Note 3: The definition of viewing angle:

Refer to the graph below marked by θ and Φ



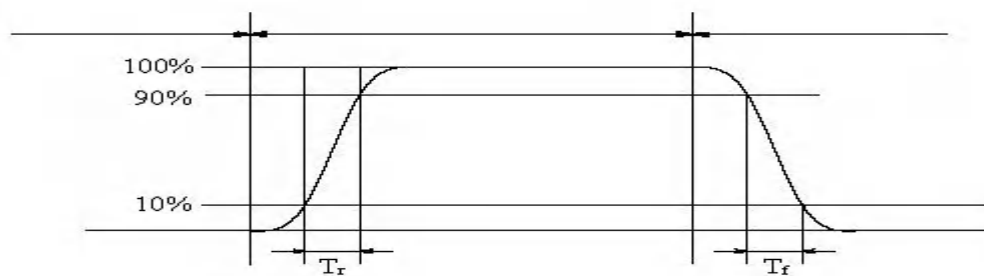
Note 4: Definition of contrast ratio.(Test LCD using DMS501)



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

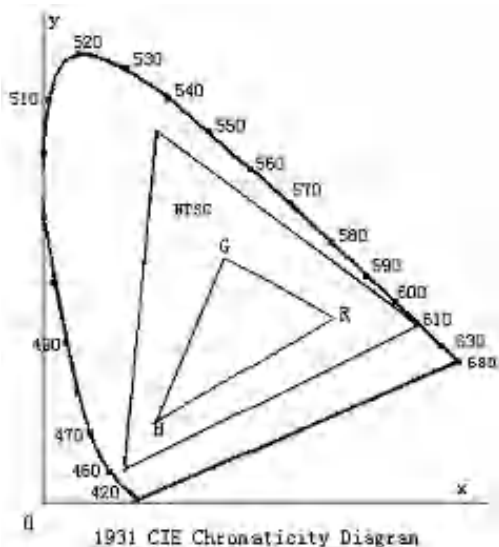
Note 5: Definition of Response time. (Test LCD using DMS501):

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.

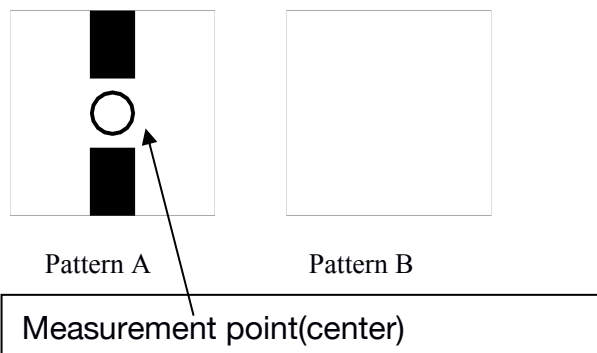


Color gamut:

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

Note 7: Definition of cross talk.

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



Electric volume value=3F+/-3Hex

8. Reliability Test Items and Criteria

No	Test Item	Test condition	Criterion
1	High Temperature Storage	90°C 500H 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	-40°C 500H Restore 2H at 25°C Power off	
3	High Temperature Operation	85°C 500H Restore 2H at 25°C Power on	
4	Low Temperature Operation	-30°C 500H Restore 4H at 25°C Power on	
5	High Temperature/Humidity Operation	60°C±2°C 90%RH 500H Power on	
6	Temperature Cycle	--30°C----->85°C 30min 5min 30min after 5 cycle, Restore 2H at 25°C Power off	
7	Vibration Test	10Hz~150Hz, 100m/s2, 120min	Not allowed cosmetic and electrical defects.
8	Shock Test	Half- sine wave,300m/s2,11ms	

Note: Operation: Supply 2.8V 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

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.

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 : $0^{\circ}\text{C} \sim 40^{\circ}\text{C}$

Relatively humidity: $\leq 80\%$

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