EXAMINED BY : Sam Chou	EMERGING DISPLAY TECHNOLOGIES CORPORATION	FILE NO . CAS-0009581 ISSUE : SEP.20, 2023
APPROVED BY: Elvis Wu		TOTAL PAGE : 23 VERSION : 1

CUSTOMER ACCEPTANCE SPECIFICATIONS

MODEL NO. :

ET080013DDMA

(RoHS)

FOR MESSRS :

_____

CUSTOMER'S APPROVAL

DATE :

_____

BY :

_____

EMERGING DISPLAY TECHNOLOGIES CORPORATION	MODEL NO.	VERSION	PAGE
	ET080013DDMA	1	0-1

RECORDS OF REVISION

DOC . FIRST ISSUE

SEP.20, 2023

DATE	REVISED PAGE NO.	SUMMARY

TABLE OF CONTENTS

1. GENERAL SPECIFICATIONS

1.1 DATA SHEET FOR CONTROLLER/DRIVER
PLEASE REFER TO：

ST5651DA+ST5083DA

1.2 MATERIAL SAFETY DESCRIPTION
ASSEMBLIES SHALL COMPLY WITH EUROPEAN ROHS REQUIREMENTS, INCLUDING PROHIBITED MATERIALS/COMPONENTS CONTAINING LEAD, MERCURY, CADMIUM, HEXAVALENT CHROMIUM, POLYBROMINATED BIPHENYLS (PBB) AND POLYBROMINATED
DIPHENYL ETHERS (PBDE), BIS(2-ETHYLHEXYL) PHTHALATE (DEHP), BUTYL BENZYL PHTHALATE (BBP), DIBUTYL PHTHALATE (DBP), DIISOBUTYL PHTHALATE (DIBP).

2. MECHANICAL SPECIFICATIONS

(1) DISPLAY SIZE	8 inch
(2) NUMBER OF DOTS	1024(RGB)W * 768H DOTS
(3) MODULE SIZE	173.54W * 135.55H *2.44D mm
(4) VIEWING AREA	164.45W * 123.94H mm
(5) ACTIVE AREA	162.05W * 121.54H mm
(6) DOT SIZE	0.05275W * 0.15825H mm
(7) PIXEL SIZE	0.15825W * 0.15825H mm
(8) LCD TYPE	TFT, IPS, TRANSMISSIVE, NORMALLY BLACK
(9) COLOR	262K / 16.7M
(10) VIEWING DIRECTION	SUPER WIDE VIEW
(11) BACK LIGHT	LED, COLOR：WHITE
(12) INTERFACE MODE	LVDS (6/8 BIT) DE MODE ONLY
(13) WEIGHT	124g

3. ABSOLUTE MAXIMUM RATINGS

3.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN.	MAX.	UNIT	REMARK
POWER SUPPLY VOLTAGE	VDD-VSS	-0.5	5.0	V	
STATIC ELECTRICITY	—	—	—	V	NOTE (1)

NOTE (1)：LCM SHOULD BE GROUNDED DURING LCM HANDLING.

3.2 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS

ITEM	OPERATING		STORAGE		REMARK
	MIN.	MAX.	MIN.	MAX.	
AMBIENT TEMPERATURE	-20°C	70°C	-30°C	75°C	NOTE (1) , (2) , (3)
HUMIDITY	NOTE (4)		NOTE (4)		WITHOUT CONDENSATION
VIBRATION	—	2.45 m/s^2 (0.25G)	—	11.76m/s^2 (1.2G)	10~100 Hz XYZ DIRECTIONS 1 HR EACH
SHOCK	—	29.4 m/s^2 (3G)	—	490.0 m/s^2 (50G)	10 ms XYZ DIRECTIONS 1 TIME EACH
CORROSIVE GAS	NOT ACCEPTABLE		NOT ACCEPTABLE		

NOTE (1)：THE ABSOLUTE MAXIMUM RATINGS OF THIS PRODUCT SHOULD NOT BE EXCEEDED AT ANY TIME. IF THESE RATINGS ARE EXCEEDED, THE PRODUCT'S PERFORMANCE IS NOT GUARANTEED AND THE PRODUCT MAY EXPERIENCE PERMANENT DAMAGE.

NOTE (2)：BACKGROUND COLOR CHANGES SLIGHTLY DEPENDING ON AMBIENT TEMPERATURE THIS PHENOMENON IS REVERSIBLE.

NOTE (3)：Ta ≤ 60°C：90%RH MAX. (96HRS MAX).

Ta > 60°C：ABSOLUTE HUMIDITY MUST BE LOWER THAN THE HUMIDITY OF 90%RH AT 40°C (96HRS MAX).

4. ELECTRICAL CHARACTERISTICS

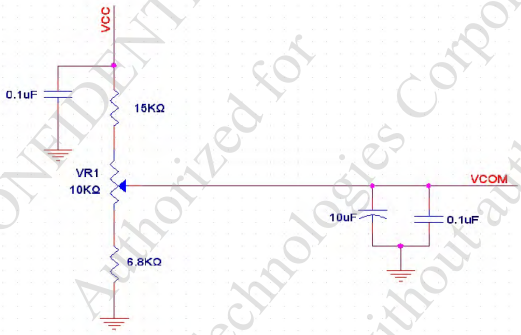
Ta = 25 °C

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	REMARK
POWER SUPPLY VOLTAGE	VDD-VSS	—	3.15	3.3	3.45	V	
LOGIC HIGH INPUT VOLTAGE	VIH	—	0.7*VDD	—	VDD	V	NOTE (3)
LOGIC LOW INPUT VOLTAGE	VIL	—	0	—	0.3*VDD	V	
POWER SUPPLY CURRENT	IDD	VDD-VSS=3.3V	—	240	310	mA	NOTE (1)
POWER SUPPLY VOLTAGE FOR LED BACKLIGHT	VLED-VLSS	ILED = 220mA	8.4	9.3	10.5	V	NOTE (2) NOTE (4) NOTE (5)
LED LIFE TIME	—	IF=20mA (PER LED)	30K	—	—	HRS	NOTE (6) NOTE (7)

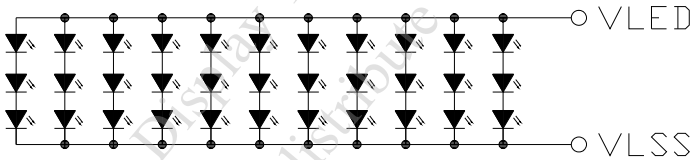
NOTE (1) : THE DISPLAY PATTERN IS ALL “WHITE”.

NOTE (2) : THE LED SUPPLY VOLTAGE IS DEFINED BY THE NUMBER OF LED AT Ta=25°C AND ILED=220mA.

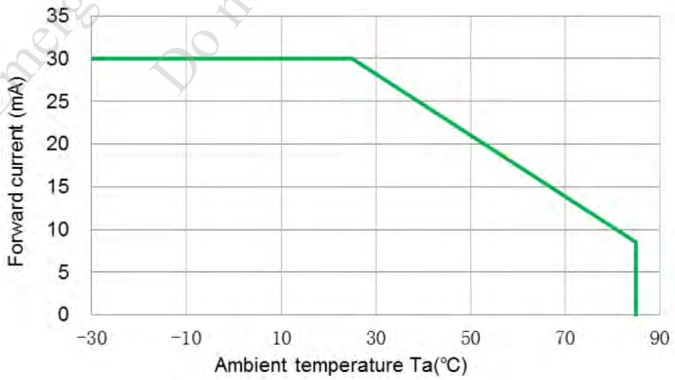
NOTE (3) : RESET,STBYB,SELB,L/R,U/D.



NOTE (4) : INTERNAL CIRCUIT DIAGRAM OF BACKLIGHT



NOTE (5) : MAXIMUM DRIVING FORWARD DC CURRENT VS. AMBIENT TEMPERATURE.



NOTE (6) : CONDITIONS; Ta=25 °C, CONTINUOUS LIGHTING.

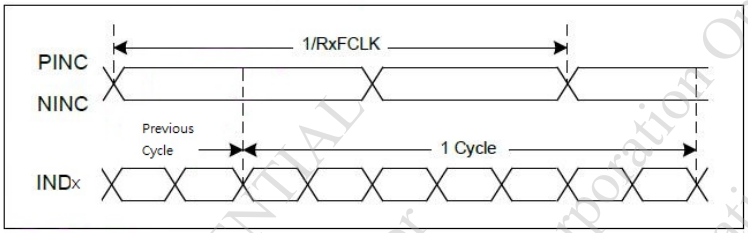
NOTE (7) : DEFINITIONS OF LIFE TIME
LCD LUMINANCE BECOMES HALF OF THE INITIAL VALUE.

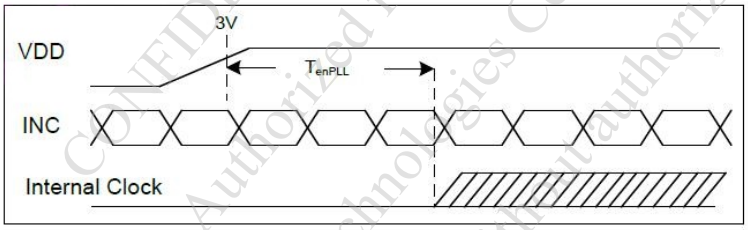
5. TIMING CHARACTERISTICS

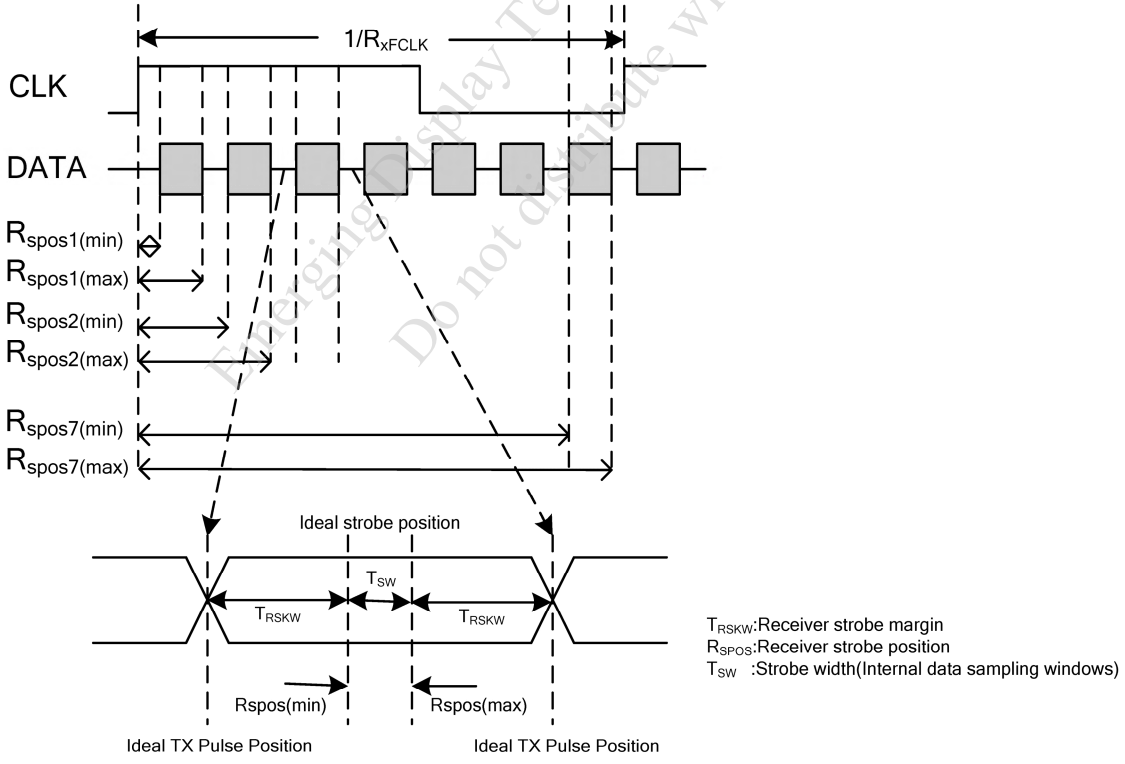
5.1 LVDS SIGNAL TIMING CHARACTERISTICS

5.1.1 AC ELECTRICAL CHARACTERISTICS

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
CLOCK FREQUENCY	R_{xFCLK}	20	—	71	MHz	
INPUT DATA SKEW MARGIN	T_{RSKM}	500	—	—	ps	$\|V_{ID}\|$=400mV R_{xVCM}=1.2V R_{xFCLK}=71MHz
CLOCK HIGH TIME	T_{LVCH}	—	4/(7xRxFCLK)	—	ns	
CLOCK LOW TIME	T_{LVCL}	—	3/(7xRxFCLK)	—	ns	
PLL WAKE-UP TIME	T_{ENPLL}	—	—	150	us	







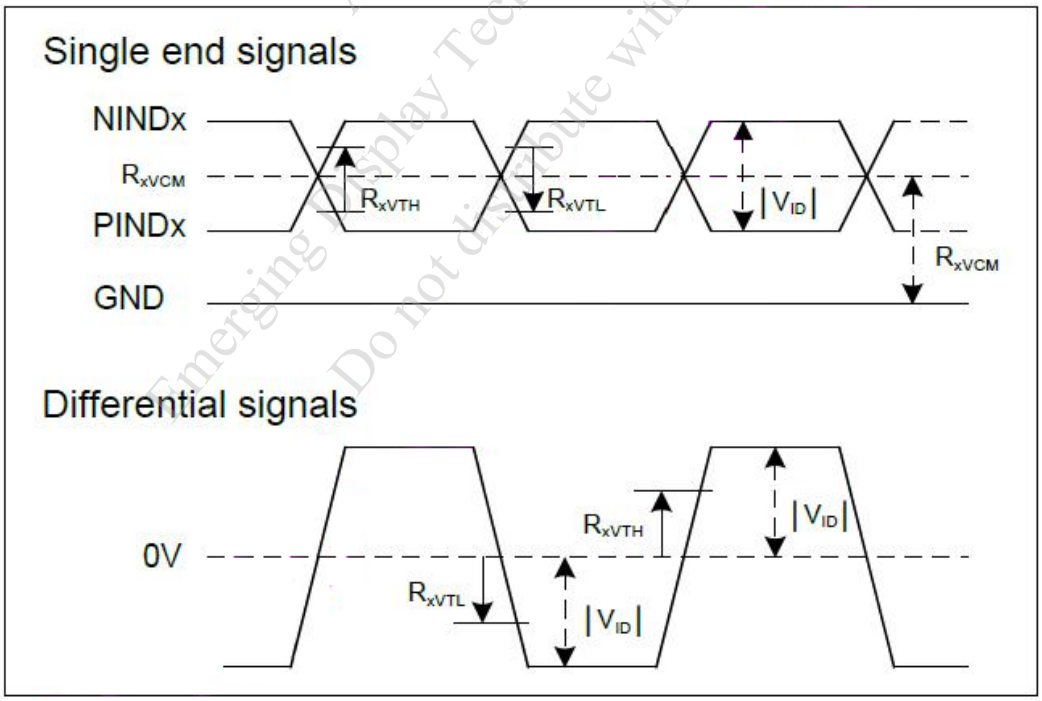
T_{RSKW}:Receiver strobe margin
R_{SPOS}:Receiver strobe position
T_{SW} :Strobe width(Internal data sampling windows)

SSC TORENCE OF LVDS RECIEVER

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
MODULATION FREQUENCY	SSC_{MF}	23	—	93	KHz	—
MODULATION RATE	SSC_{MR}	—	—	±1	%	LVDS CLOCK =71 KHz CENTER SPREAD

5.1.2 DC ELECTRICAL CHARACTERISTICS

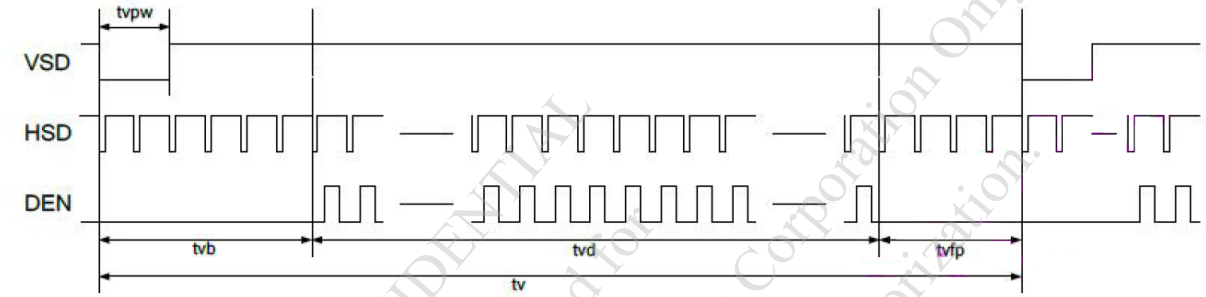
ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
DIFFERENTIAL INPUT HIGH THRESHOLD VOLTAGE	R_{xVTH}	—	—	0.1	V	R_{xVCM}=1.2V
DIFFERENTIAL INPUT LOW THRESHOLD VOLTAGE	R_{xVTL}	-0.1	—	—	V	
INPUT VOLTAGE RANGE (SINGLED-END)	R_{xVIN}	0	—	2.4	V	
DIFFERENTIAL INPUT COMMON MODE VOLTAGE	R_{xVCM}	$\|V_{ID}\|/2$	—	2.4-$\|V_{ID}\|/2$	V	
DIFFERENTIAL INPUT VOLTAGE	$\|V_{ID}\|$	0.2	—	0.6	V	
DIFFERENTIAL INPUT LEAKAGE CURRENT	RV_{xliz}	-10	—	10	uA	
LVDS DIGTAL OPERATING CURRENT	Iddlvds	—	40	50	mA	Fclk=65MHz, VDD=3.3V
LVDS DIGTAL STAND-BY CURRENT	Istlvds	—	10	50	uA	CLOCK&ALL FUNCTIONS ARE STOPPED



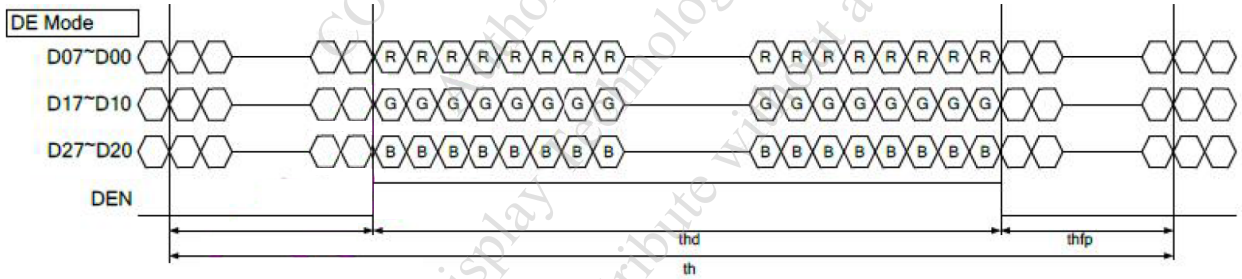
5.1.3 TIMING TABLE

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
CLKIN FREQUENCY	fclk	52	65	71	MHz	FRAME RATE = TBD
HORIZONTAL DISPLAY AREA	thd		1024		CLKIN	
1 HORIZONTAL LINE	th	1114	1344	1400		
HSD BLANKING	thb+thfp	90	320	376		
VERTICAL DISPLAY AREA	tvd		768		H	
1 VERTICAL LINE	tv	778	806	845		
VSD BLANKKING	tvb+tvfp	10	38	77		

Vertical input timing

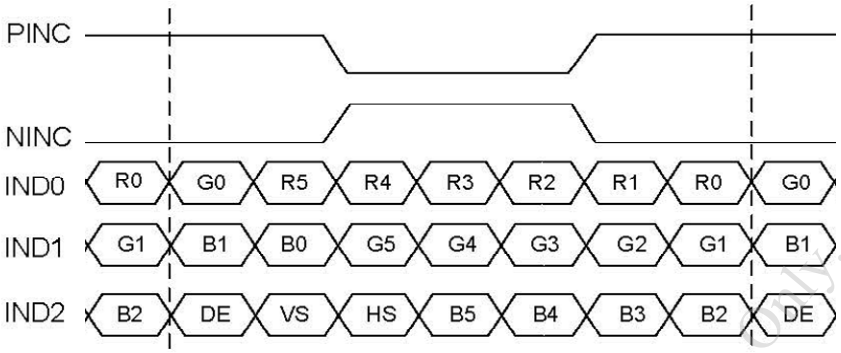


Horizontal input timing

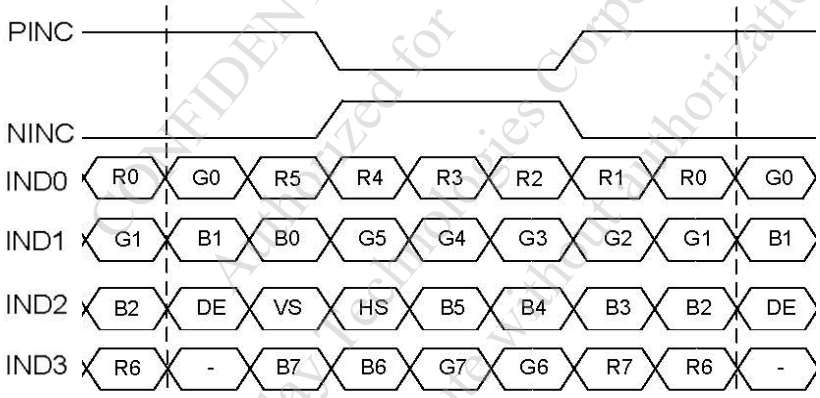


5.1.4 TFT MODULE DATA INPUT FORMAT

6 BIT LVDS INPUT(SELB="H")



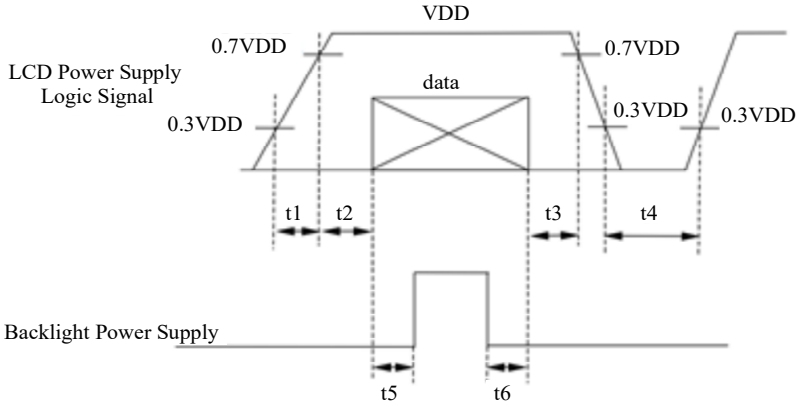
8 BIT LVDS INPUT(SELB="L")



NOTE : SUPPORT DE YIMING MODE ONLY, SYNC MODE NOT SUPPORT TED.

5.1.5 POWER SEQUENCE

0.1 ms ≤ t1 ≤ 10 ms	200 ms ≤ t4
0 < t2 ≤ 50 ms	200 ms ≤ t4
0 < t3 ≤ 50 ms	0 ≤ t6



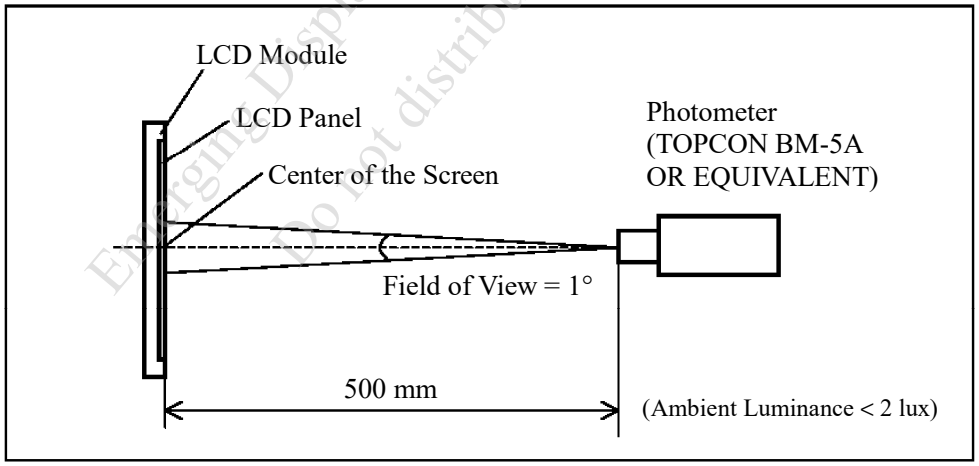
6. OPTICAL CHARACTERISTICS

6.1 OPTICAL CHARACTERISTICS

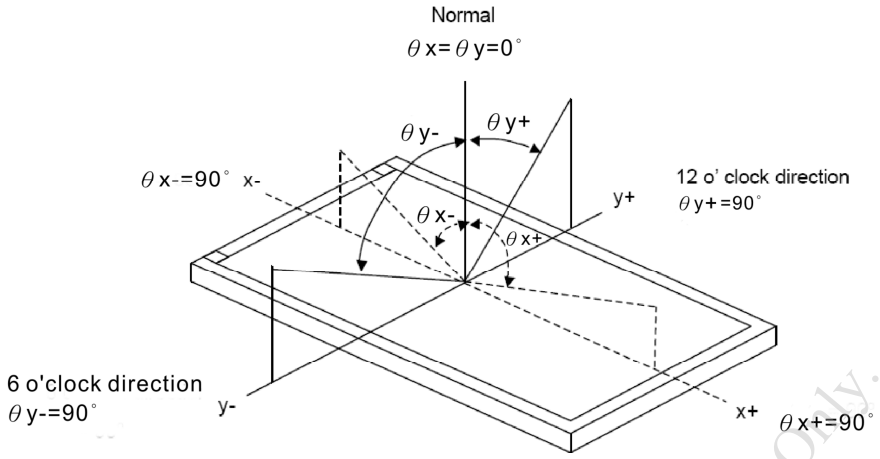
Ta = 25 ± 2 °C

ITEM		SYMBOL	CONDITION		MIN.	TYP.	MAX.	UNIT	REMARK
VIEWING ANGLE		θ_{y+}	CR ≥ 10	θ_x=0°	75	80	—	deg.	NOTE (2) NOTE (3)
		θ_{y-}			75	80	—		
		θ_{x+}		θ_y=0°	75	80	—		
		θ_{x-}			75	80	—		
CONTRAST RATIO (CENTER)		CR	θx=0° , θy=0°		600	800	—	—	NOTE (3)
RESPONSE TIME		$T_R + T_F$	θx=0° , θy=0°		—	25	35	msec	NOTE (4)
COLOR OF CIE COORDINATE (CENTER)	WHITE	Wx	θx=0°, θy=0° VDD-VSS=3.3V ILED=390mA		0.25	0.30	0.35	—	NOTE (5)
		Wy			0.30	0.35	0.40		
	RED	Rx			0.53	0.58	0.63		
		Ry			0.30	0.35	0.40		
	GREEN	Gx			0.27	0.32	0.37		
		Gy			0.55	0.60	0.65		
	BLUE	Bx			0.10	0.15	0.20		
		By			0.07	0.12	0.17		
THE BRIGHTNESS OF MODULE(CENTER)		B			400	500	—	cd/m^2	NOTE (6)
THE UNIFORMITY OF MODULE(9 POINTS)		—			70	75	—	%	NOTE (7)

NOTE (1)：TEST EQUIPMENT SETUP :
AFTER STABILIZING AND LEAVING THE PANEL ALONE AT A GIVEN TEMPERATURE FOR 30 MINUTES. MEASUREMENT SHOULD BE EXECUTED IN A STABLE, WINDLESS, AND DARK ROOM.



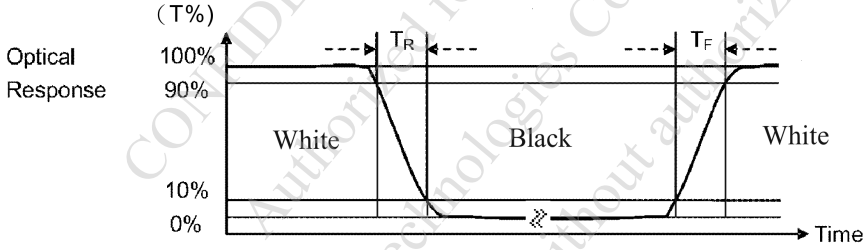
NOTE (2)：DEFINITION OF VIEWING ANGLE :



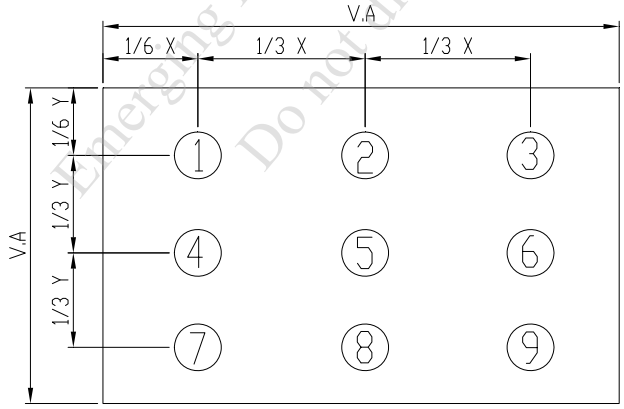
NOTE (3)：DEFINITION OF CONTRAST RATIO (CR) :
MEASURED AT THE CENTER POINT OF MODULE

$$\text{CONTRAST RATIO(CR)} = \frac{\text{BRIGHTNESS MEASURED WHEN LCD IS AT "WHITE STATE"}}{\text{BRIGHTNESS MEASURED WHEN LCD IS AT "BLACK STATE"}}$$

NOTE (4)：DEFINITION OF RESPONSE TIME : T_R AND T_F
THE FIGURE BELOW IS THE OUTPUT SIGNAL OF THE PHOTO DETECTOR.



NOTE (5)：DEFINITION OF COLOR CHROMATICITY
(a)100% RGB PIXEL DATA TRANSMISSION WHEN ALL THE INPUT TERMINALS OF MODULE ARE ELECTRICALLY POWERED ON.
(b)MEASURED AT THE CENTER POINT OF MODULE
NOTE (6)：MEASURED THE BRIGHTNESS OF WHITE STATE AT CENTER POINT.
NOTE (7)：(a)DEFINITION OF BRIGHTNESS UNIFORMITY

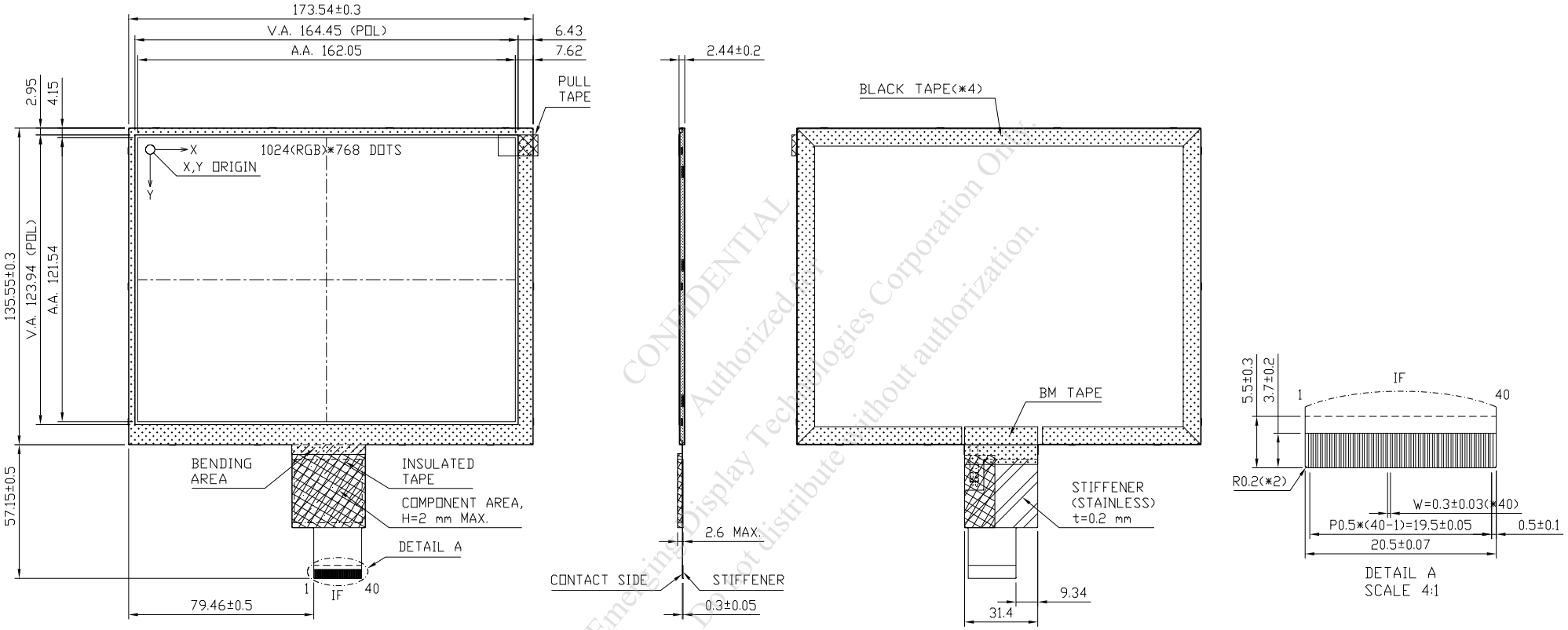


UNIT：mm

(b)THE BRIGHTNESS UNIFORMITY CALCULATING METHOD

$$\text{UNIFORMITY} : \frac{\text{MINIMUM BRIGHTNESS}}{\text{MAXIMUM BRIGHTNESS}} * 100\%$$

7. OUTLINE DIMENSIONS



UNIT : mm
SCALE : NTS

THIRD ANGLE PROJECTION

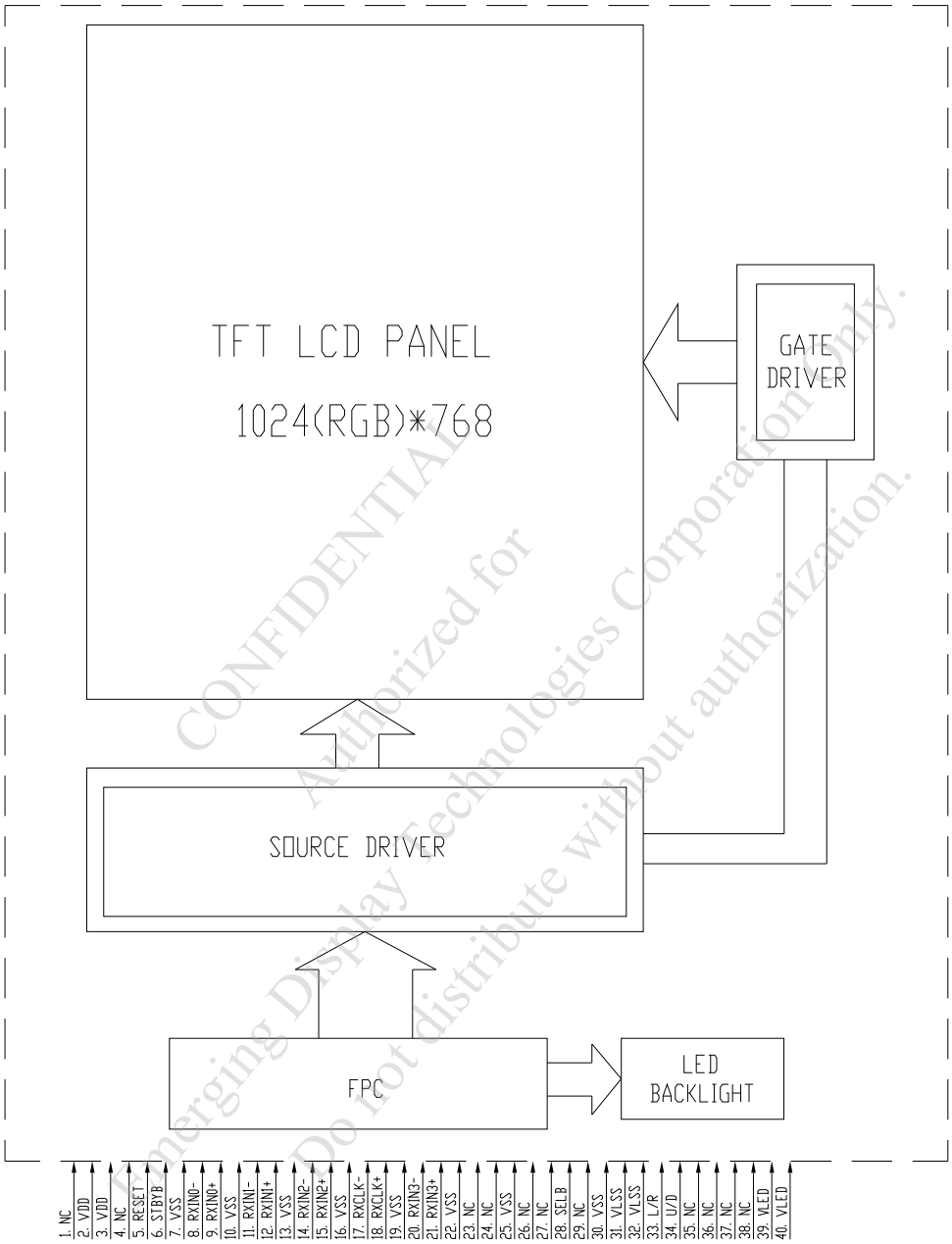
NOT SPECIFIED TOLERANCE IS ± 0.3

NOTE :

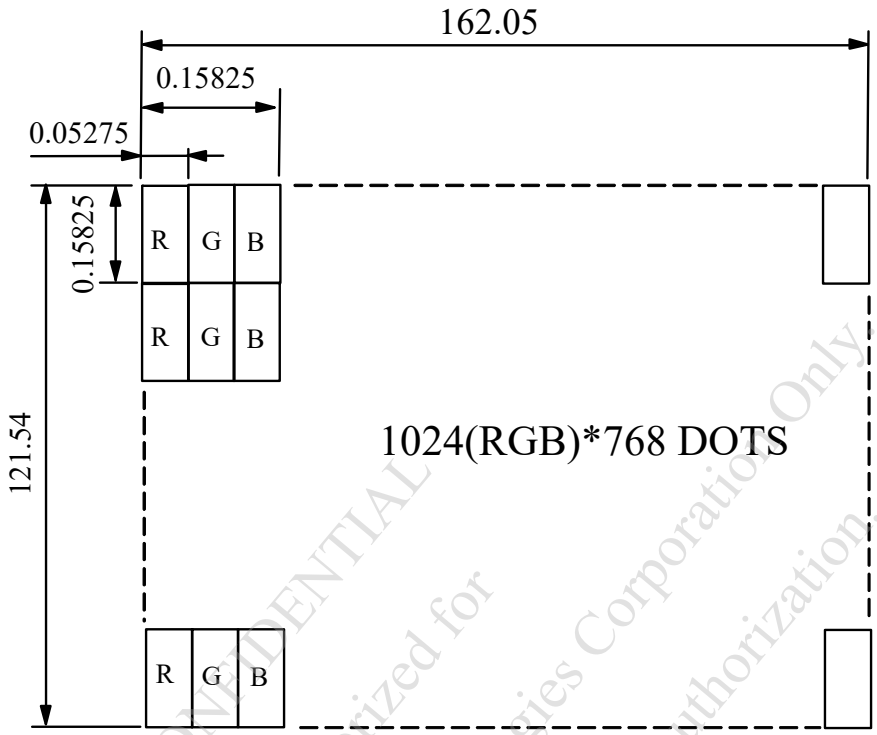
1.RECOMMEND MATCH CONNECTOR : FIXED STAR F05F1B-40-GR

2.FPC BENDING RADIUS SHOULD BE MORE THAN 1.0 mm.

8. BLOCK DIAGRAM



9. DETAIL DRAWING OF DOT MATRIX



UNIT : mm
SCALE : NTS
NOT SPECIFIED TOLERANCE IS ± 0.1
DOTS MATRIX TOLERANCE IS ± 0.01

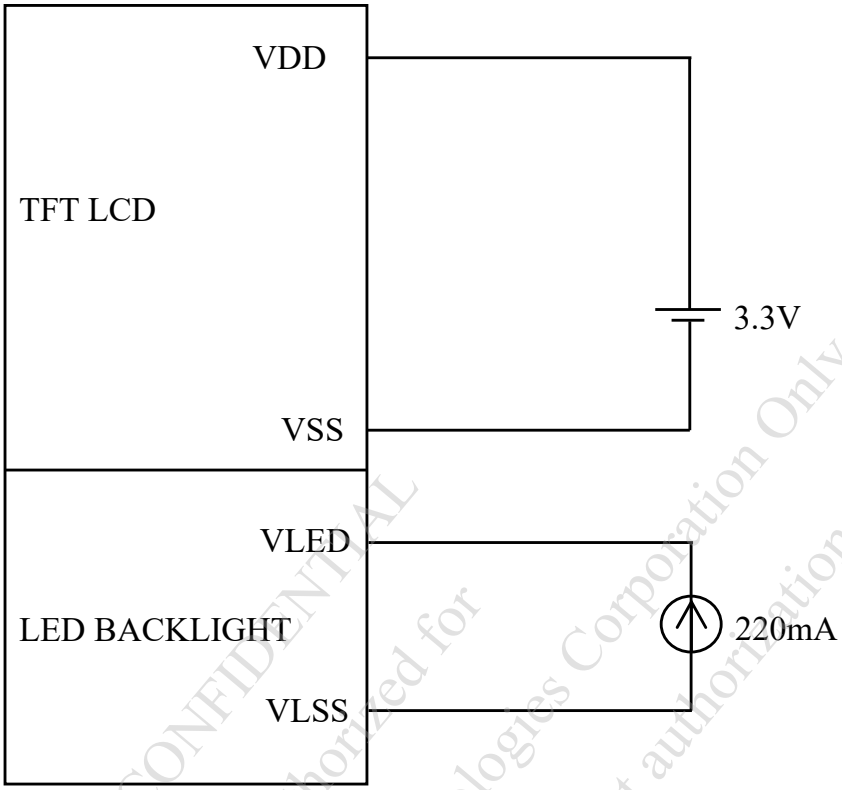
10. INTERFACE SIGNALS

10.1 TFT MODULE INTERFACE (IF)

PIN NO.	SYMBOL	I/O/P	FUNCTION
1	NC	P	COMMON VOLTAGE
2	VDD	P	POWER VOLTAGE FOR DIGITAL CIRCUIT
3	VDD	P	POWER VOLTAGE FOR DIGITAL CIRCUIT
4	NC	-	NO CONNECTION
5	RESET	I	GLOBAL RESET PIN
6	STBYB	I	STANDBY MODE, NORMALLY PULLED HIGH STBYB = “1”, NORMAL OPERATION STBYB = “0”, TIMING CONTROLLER, SOURCE DRIVER WILL TURN OFF, ALL OUTPUT ARE HIGH-Z
7	VSS	P	GROUND
8	RXIN0-	I	- LVDS DIFFERENTIAL DATA INPUT
9	RXIN0+	I	+ LVDS DIFFERENTIAL DATA INPUT
10	VSS	P	GROUND
11	RXIN1-	I	- LVDS DIFFERENTIAL DATA INPUT
12	RXIN1+	I	+ LVDS DIFFERENTIAL DATA INPUT
13	VSS	P	GROUND
14	RXIN2-	I	- LVDS DIFFERENTIAL DATA INPUT
15	RXIN2+	I	+ LVDS DIFFERENTIAL DATA INPUT
16	VSS	P	GROUND
17	RXCLKIN-	I	- LVDS DIFFERENTIAL CLOCK INPUT
18	RXCLKIN+	I	+ LVDS DIFFERENTIAL CLOCK INPUT
19	VSS	P	GROUND
20	RXIN3-	I	- LVDS DIFFERENTIAL DATA INPUT
21	RXIN3+	I	+ LVDS DIFFERENTIAL DATA INPUT
22	VSS	P	GROUND
23	NC	-	NO CONNECTION
24	NC	-	NO CONNECTION
25	VSS	P	GROUND
26	NC	-	NO CONNECTION
27	NC	-	NO CONNECTION
28	SELB	I	6 BIT /8BIT MODE SELECT(H:6 BIT, L:8 BIT)
29	NC	-	NO CONNECTION
30	VSS	P	GROUND
31	VLSS	P	LED CATHODE
32	VLSS	P	LED CATHODE
33	L/R	I	HORIZONTAL INVERSION
34	U/D	I	VERTICAL INVERSION
35	NC	-	NO CONNECTION
36	NC	-	NO CONNECTION
37	NC	-	NO CONNECTION
38	NC	-	NO CONNECTION
39	VLED	P	LED ANODE
40	VLED	P	LED ANODE

I: INPUT, O: OUTPUT, P: POWER

11. POWER SUPPLY



12. INSPECTION CRITERIA

12.1 APPLICATION

THIS INSPECTION STANDARD IS TO BE APPLIED TO THE LCD MODULE DELIVERED FROM EMERGING DISPLAY TECHNOLOGIES CORP.(E.D.T) TO CUSTOMERS

12.2 INSPECTION CONDITIONS

12.2.1 (1)OBSERVATION DISTANCE：45±5cm

(2)VIEWING ANGLE：±45°

±45° (FOR SECTION WITHIN VIEWING AREA), REFER TO FIG.A

90° (FOR SECTION OUTSIDE OF VIEWING AREA), REF TO FIG.B

PERPENDICULAR TO MODULE SURFACE

VIEWING ANGLE SHOULD BE SMALLER THAN 45°

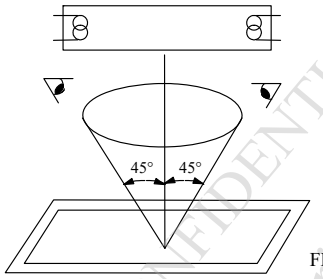


FIG.A

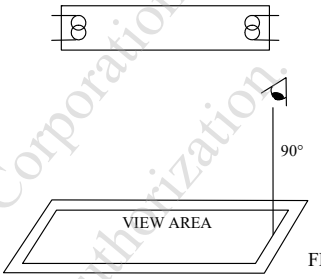


FIG.B

THE INSPECTION CRITERIA IS ACCORDING TO LINE OF SIGHT. INSPECTION SHALL BE MADE WITHIN THE HALF SECTION OF THE VIEWING CONE GENERATED BY LINE SEGMENT OF 45° WITH RESPECT TO THE VERTICAL AXIS FROM CENTER VERTEX OF LCD, THE FLUORESCENT LAMP AND THE CONE AXIS MUST BE PERPENDICULAR TO THE LCD SURFACE.

IF THE DEFECTS ARE OUTSIDE OF VIEWING AREA, IT SHALL BE INSPECTED BY 90° WITH RESPECT TO THE VERTICAL AXIS FROM EDGE OF VIEWING AREA.

12.2.2 ENVIRONMENT CONDITIONS：

AMBIENT TEMPERATURE		25±5°C
AMBIENT HUMIDITY		65 ± 20%RH
AMBIENT ILLUMINATION	COSMETIC INSPECTION	600~800 lux
	FUNCTIONAL INSPECTION	300~500 lux
INSPECTION TIME		15 secs

12.2.3 INSPECTION LOT

QUANTITY PER DELIVERY LOT FOR EACH MODEL

12.2.4 INSPECTION METHOD

A SAMPLING INSPECTION SHALL BE MADE ACCORDING TO THE FOLLOWING PROVISIONS TO JUDGE THE ACCEPTABILITY

(a)APPLICABLE STANDARD：

ANSI/ ASQ Z1.4 NORMAL INSPECTION LEVEL II

(b)AQL : MAJOR DEFECT：AQL 0.65

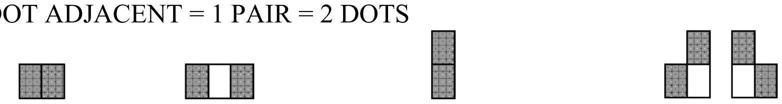
MINOR DEFECT：AQL 1.0

12.3 INSPECTION STANDARDS

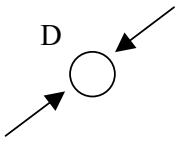
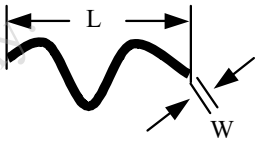
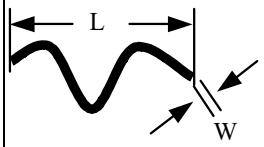
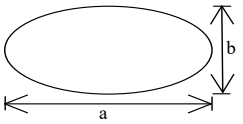
12.3.1 VISUAL DEFECTS CLASSIFICATION

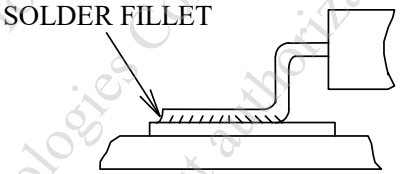
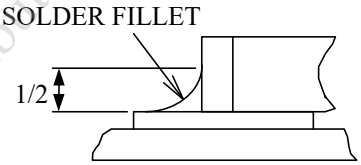
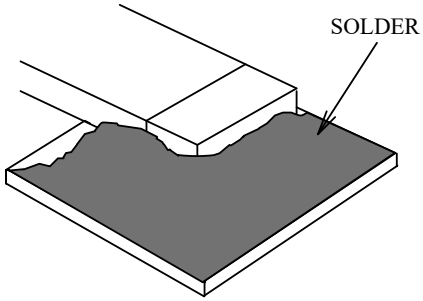
TYPE OF DEFECT	INSPECTION ITEM	DEFECT FEATURE	AQL
MAJOR DEFECT	1.DISPLAY ON	• DEFECT TO MISS SPECIFIED DISPLAY FUNCTION, FOR ALL AND SPECIFIED DOTS EX: DISCONNECTION, SHORT CIRCUIT ETC	0.65
	2.BACKLIGHT	• NO LIGHT • FLICKERING AND OTHER ABNORMAL ILLUMINATION	
	3.DIMENSIONS	• SUBJECT TO INDIVIDUAL ACCEPTANCE SPECIFICATIONS	
MINOR DEFECT	1.DISPLAY ZONE	• BLACK/WHITE SPOT • BUBBLES ON POLARIZER • NEWTON RING • BLACK/WHITE LINE • SCRATCH • CONTAMINATION • UNEVEN COLOR SPREAD	1.0
	2.BEZEL ZONE	• STAINS • SCRATCHES • FOREIGN MATTER	
	3.SOLDERING	• INSUFFICIENT SOLDER • SOLDERED IN INCORRECT POSITION • CONVEX SOLDERING SPOT • SOLDER BALLS • SOLDER SCRAPS	
	4.DISPLAY ON (ALL ON)	• LIGHT LINE	

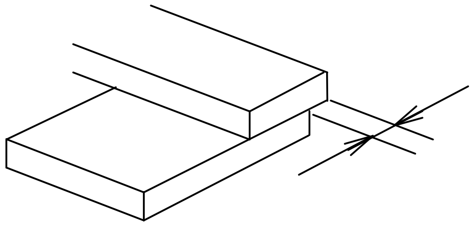
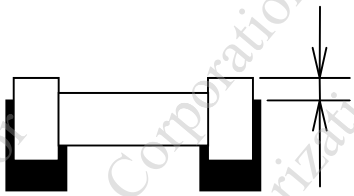
12.3.2 MODULE DEFECTS CLASSIFICATION

<table>
<tr><th>NO.</th><th>ITEM</th><th>CRITERIA</th></tr>
<tr><td>1</td><td>DISPLAY ON INSPECTION</td><td>1.INCORRECT PATTERN
2.MISSING SEGMENT
3.DIM SEGMENT
4.OPERATING VOLTAGE BEYOND SPEC</td></tr>
<tr><td>2</td><td>OVERALL DIMENSIONS</td><td>1.OVERALL DIMENSION BEYOND SPEC</td></tr>
<tr><td>3</td><td>DOT DEFECT</td><td>1.INSPECTION PATTERN: FULL WHITE, FULL BLACK, RED, GREEN AND BLUE SCREENS.
2.
<table>
<tr><th colspan="2">ITEMS</th><th>ACCEPTABLE COUNT</th></tr>
<tr><td rowspan="3">PIXEL BRIGHT DOT</td><td>RANDOM</td><td>N ≤ 3</td></tr>
<tr><td>2 DOTS ADJACENT</td><td>N ≤ 0</td></tr>
<tr><td>3 DOTS ADJACENT</td><td>N ≤ 0</td></tr>
<tr><td rowspan="3">PIXEL DARK DOT</td><td>RANDOM</td><td>N ≤ 4</td></tr>
<tr><td>2 DOTS ADJACENT</td><td>N ≤ 0</td></tr>
<tr><td>3 DOTS ADJACENT</td><td>N ≤ 0</td></tr>
<tr><td colspan="2">TOTAL PIXEL BRIGHT AND PIXEL DARK DOT</td><td>N ≤ 6</td></tr>
<tr><td>DISTANCE</td><td>1. MINIMUM DISTANCE BETWEEN BRIGHT DOTS
2. MINIMUM DISTANCE BETWEEN DARK DOTS
3. MINIMUM DISTANCE BETWEEN DARK AND BRIGHT DOT</td><td>5mm</td></tr>
<tr><td>IMPURITY DOT</td><td colspan="2">WHEN VISIBLE THROUGH 5% ND FILTER：
1. D≤0.3mm, IGNORE
2. 0.3mm<D≤0.5mm, N≤4, DISTANCE ≥5mm</td></tr>
<tr><td colspan="2">DISPLAY FAILURE (V-LINE/H-LINE/CROSS LINE ETC.)</td><td>NOT ALLOWABLE</td></tr>
</table>
NOTE：DEFINITION OF DOT DEFECT INDUCED FROM THE PANEL INSIDE
1.PIXEL BRIGHT DOT：
DOT APPEAR BRIGHT AND UNCHANGED IN SIZE IN WHICH LCD PANEL IS DISPLAYING UNDER BLACK PATTERN. THE DOT SIZE IS LARGE THAN 1/2 SUB-PIXEL, IT IS REGARDED AS ONE DOT DEFECT.
2.PIXEL DARK DOT：
DOTS APPEAR DARK AND UNCHANGED IN SIZE IN WHICH LCD PANEL IS DISPLAYING UNDER PURE RED, GREEN, BLUE PATTERN. THE DOT SIZE IS LARGE THAN 1/2 SUB-PIXEL, IT IS REGARDED AS ONE DOT DEFECT.
3.IMPURITY DOT：
OTHER BLURRY DOT、DIRTY DOT、COLOR DOT、TINY BRIGHT DOT UNDER PURE BLACK, WHITE, RED, GREEN, BLUE PATTERN EXCEPT PIXEL BRIGHT AND PIXEL DARK DOT.
4.2 DOT ADJACENT = 1 PAIR = 2 DOTS


2 dot adjacent   2 dot adjacent   2 dot adjacent (vertical)   2 dot adjacent (slant)</td></tr>
</table>

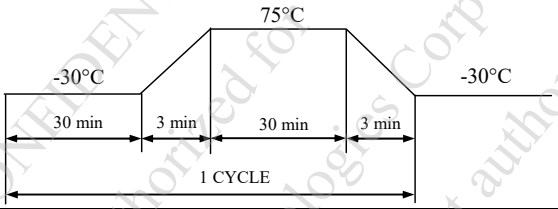
<table>
<tr><th>NO.</th><th>ITEM</th><th>CRITERIA</th></tr>
<tr><td>4</td><td>FOREIGN MATTER / BLACK SPOTS / WHITE SPOTS (CIRCULAR TYPE)</td><td>THE FOLLOWING BLACK/WHITE SPOT ARE WITHIN THE VIEWING AREA. AVERAGE DIAMETER：D (mm)
<table><tr><th>SIZE D</th><th>PERMISSIBLE NO.</th></tr><tr><td>D≤0.3</td><td>IGNORE</td></tr><tr><td>0.3<D≤0.5</td><td>5</td></tr><tr><td>D>0.5</td><td>0</td></tr></table>NOTE (1)：THE DISTANCE BETWEEN DEFECTS SHOULD BE MORE THAN 10mm APART.
  </td></tr>
<tr><td>5</td><td>SCRATCHES</td><td>THE FOLLOWING SCRATCH IS WITHIN THE VIEWING AREA. WIDTH：W (mm) , LENGTH : L (mm)
<table><tr><th>LENGTH：L</th><th>WIDTH：W</th><th>PERMISSIBLE NO.</th></tr><tr><td>—</td><td>W ≤ 0.07</td><td>IGNORE</td></tr><tr><td>L ≤ 5.0</td><td>0.07 < W ≤ 0.1</td><td>5</td></tr><tr><td>5.0 < L</td><td>0.1 < W</td><td>NONE</td></tr></table>NOTE (1)：THE DISTANCE BETWEEN DEFECTS SHOULD BE MORE THAN 10mm APART.
  </td></tr>
<tr><td>6</td><td>FOREIGN FIBER / BLACK / WHITE LINE (LINEAR TYPE)</td><td>THE FOLLOWING BLACK LINE, WHITE LINE IS WITHIN THE VIEWING AREA. WIDTH：W (mm) , LENGTH : L (mm)
<table><tr><th>LENGTH：L</th><th>WIDTH：W</th><th>PERMISSIBLE NO.</th></tr><tr><td>—</td><td>W ≤ 0.07</td><td>IGNORE</td></tr><tr><td>L ≤ 5.0</td><td>0.07 < W ≤ 0.1</td><td>5</td></tr><tr><td>5.0 < L</td><td>0.1 < W</td><td>NONE</td></tr></table>NOTE (1)：THE DISTANCE BETWEEN DEFECTS SHOULD BE MORE THAN 10mm APART.
  </td></tr>
<tr><td>7</td><td>BUBBLES ON THE POLARIZER / DIRT / DENT / SURFACE STAINS</td><td><table><tr><th></th><th>AVERAGE DIAMETER (mm)：D</th><th>NUMBER OF PIECES PERMITTED</th></tr><tr><td rowspan="3">BUBBLE ON THE POLARIZER</td><td>D ≤ 0.3</td><td>IGNORE</td></tr><tr><td>0.3 < D ≤ 0.5</td><td>N ≤ 4</td></tr><tr><td>0.5 < D</td><td>NONE</td></tr><tr><td rowspan="3">DIRT / DENT/ SURFACE STAINS</td><td>D ≤ 0.3</td><td>IGNORE</td></tr><tr><td>0.3 < D ≤ 0.5</td><td>N ≤ 4</td></tr><tr><td>0.5 < D</td><td>0</td></tr></table>NOTE：
1. POLARIZER BUBBLE IS DEFINED AS THE BUBBLE APPEARS ON ACTIVE DISPLAY AREA. THE DEFECT OF POLARIZER BUBBLE SHALL BE IGNORED IF THE POLARIZER BUBBLE APPEARS ON THE OUTSIDE OF ACTIVE DISPLAY AREA.
2. THE EXTRANEOUS SUBSTANCE IS DEFINED AS IT CAN BE OBSERVED WHEN THE MODULE IS POWER ON.
3. THE DEFINITION OF AVERAGE DIAMETER, D IS DEFINED AS FOLLOWING.
AVERAGE DIAMETER (D)=(a+b)/2
4. THE DISTANCE BETWEEN DEFECTS SHOULD BE MORE THAN 10mm APART.
  </td></tr>
<tr><td>8</td><td>LINE DEFECT ON DISPLAY</td><td colspan="2">OBVIOUS VERTICAL OR HORIZONTAL LINE DEFECT IS NOT ALLOWED.</td></tr>
<tr><td>9</td><td>MURA ON DISPLAY</td><td colspan="2">IT’S ACCEPTABLE, IF MURA IS SLIGHT VISIBLE THROUGH 5% ND FILTER.</td></tr>
<tr><td>10</td><td>UNEVEN COLOR SPREAD, COLORATION</td><td colspan="2">TO BE DETERMINED BASED UPON THE STANDARD SAMPLE.</td></tr>
</table>

NO.	ITEM	CRITERIA
11	BEZEL APPEARANCE	1.BEZEL MAY NOT HAVE RUST, BE DEFORMED OR HAVE FINGER PRINTS STAINS OF OTHER CONTAMINATION. 2. BEZEL MUST COMPLY WITH JOB SPECIFICATIONS.
12	PCB	1.THERE MAY NOT BE MORE THAN 2mm OF SEALANT OUTSIDE THE SEAL AREA ON THE PCB, AND THERE SHOULD BE NO MORE THAN THREE PLACES. 2.NO OXIDATION OR CONTAMINATION PCB TERMINALS. 3.PARTS ON PCB MUST BE THE SAME AS ON THE PRODUCTION CHARACTERISTIC CHART. THERE SHOULD BE NO WRONG PARTS, MISSING PARTS OR EXCESS PARTS. 4.THE JUMPER ON THE PCB SHOULD CONFORM TO THE PRODUCT CHARACTERISTIC CHART. 5.IF SOLDER GETS ON BEZEL TAB PADS, LED PAD, ZEBRA PAD OR SCREW HOLD PAD; MAKE SURE IT IS SMOOTHED DOWN.
13	SOLDERING	1.NO SOLDERING FOUND ON THE SPECIFIED PLACE 2.INSUFFICIENT SOLDER (a)LSI, IC A POOR WETTING OF SOLDER IS BETWEEN LOWER BEND OR "HEEL" OF LEAD AND PAD  (b)CHIP COMPONENT · SOLDER IS LESS THAN 50% OF SIDES AND FRONT FACE WETTING  · SOLDER WETS 3 SIDES OF TERMINAL, BUT LESS THAN 25% OF SIDES AND FRONT SURFACE AREA ARE COVERED 

NO.	ITEM	CRITERIA
13	SOLDERING	3. PARTS ALIGNMENT (a)LSI, IC LEAD WIDTH IS MORE THAN 50% BEYOND PAD OUTLINE  (b)CHIP COMPONENT COMPONENT IS OFF CENTER, AND MORE THAN 50% OF THE LEADS IS OFF THE PAD OUTLINE  4.NO UNMELTED SOLDER PASTE MAY BE PRESENT ON THE PCB. 5.NO COLD SOLDER JOINTS, MISSING SOLDER CONNECTIONS, OXIDATION OR ICICLE. 6.NO RESIDUE OR SOLDER BALLS ON PCB. 7.NO SHORT CIRCUITS IN COMPONENTS ON PCB.
14	BACKLIGHT	1.NO LIGHT 2.FLICKERING AND OTHER ABNORMAL ILLUMINATION 3.SPOTS OR SCRATCHES THAT APPEAR WHEN LIT MUST BE JUDGED USING LCD SPOT, LINES AND CONTAMINATION STANDARDS. 4.BACKLIGHT DOESN'T LIGHT OR COLOR IS WRONG.
15	GENERAL APPEARANCE	1.NO OXIDATION, CONTAMINATION, CURVES OR, BENDS ON INTERFACE PIN (OLB) OF TCP. 2.NO CRACKS ON INTERFACE PIN (OLB) OF TCP. 3.NO CONTAMINATION, SOLDER RESIDUE OR SOLDER BALLS ON PRODUCT. 4.THE IC ON THE TCP MAY NOT BE DAMAGED, CIRCUITS. 5.THE UPPERMOST EDGE OF THE PROTECTIVE STRIP ON THE INTERFACE PIN MUST BE PRESENT OR LOOK AS IF IT CAUSE THE INTERFACE PIN TO SEVER. 6.THE RESIDUAL ROSIN OR TIN OIL OF SOLDERING (COMPONENT OR CHIP COMPONENT) IS NOT BURNED INTO BROWN OR BLACK COLOR. 7.SEALANT ON TOP OF THE ITO CIRCUIT HAS NOT HARDENED. 8.PIN TYPE MUST MATCH TYPE IN SPECIFICATION SHEET. 9.LCD PIN LOOSE OR MISSING PINS. 10.PRODUCT PACKAGING MUST THE SAME AS SPECIFIED ON PACKAGING SPECIFICATION SHEET. 11.PRODUCT DIMENSION AND STRUCTURE MUST CONFORM TO PRODUCT SPECIFICATION SHEET. 12.THE APPEARANCE OF HEAT SEAL SHOULD NOT ADMIT ANY DIRT AND BREAK.

13. RELIABILITY TEST

13.1 STANDARD SPECIFICATIONS FOR RELIABILITY OF LCD MODULE

NO.	ITEM	DESCRIPTION
1	HIGH TEMPERATURE TEST (OPERATION)	THE SAMPLE SHOULD BE ALLOWED TO STAND AT +70°C FOR 240 HRS
2	LOW TEMPERATURE TEST (OPERATION)	THE SAMPLE SHOULD BE ALLOWED TO STAND AT -20°C FOR 240 HRS
3	HIGH TEMPERATURE TEST (STORAGE)	THE SAMPLE SHOULD BE ALLOWED TO STAND AT +75°C FOR 200 HRS
4	LOW TEMPERATURE TEST (STORAGE)	THE SAMPLE SHOULD BE ALLOWED TO STAND AT -30°C FOR 240 HRS
5	HIGH TEMPERATURE / HUMIDITY TEST (STORAGE)	THE SAMPLE SHOULD BE ALLOWED TO STAND AT 60°C, 90% RH 240 HRS
6	THERMAL SHOCK TEST (NOT OPERATED)	THE SAMPLE SHOULD BE ALLOWED TO STAND THE FOLLOWING 10 CYCLES OF OPERATION： 
7	ESD (ELECTROSTATIC DISCHARGE) (NOT OPERATED)	AIR DISCHARGE ± 12KV CONTACT DISCHARGE ± 8KV (ACCORDING TO IEC-61000-4-2)

NOTE (1)：THE TEST SAMPLES HAVE RECOVERY TIME FOR 2 HOURS AT ROOM TEMPERATURE BEFORE THE FUNCTION CHECK. IN THE STANDARD CONDITIONS, THERE IS NO DISPLAY FUNCTION NG ISSUE OCCURRED.

NOTE (2)：IN THE STANDARD CONDITION, THERE SHALL BE NO PRACTICAL PROBLEM THAT MAY AFFECT THE DISPLAY FUNCTION. AFTER THE RELIABILITY TEST, THE PRODUCT ONLY GUARANTEES OPERATION, BUT DON'T GUARANTEE ALL OF THE COSMETIC SPECIFICATION.

NOTE (3)：TESTING CONDITIONS AND INSPECTION CRITERIA

NO.	ITEM	TEST MODEL	INSPECTION CRITERIA
1	CURRENT CONSUMPTION	REFER TO SPECIFICATION	THE CURRENT CONSUMPTION SHOULD CONFORM TO THE PRODUCT SPECIFICATION.
2	CONTRAST	REFER TO SPECIFICATION	AFTER THE TESTS HAVE BEEN EXECUTED, THE CONTRAST MUST BE LARGER THAN HALF OF ITS INITIAL VALUE PRIOR TO THE TESTS.
3	APPEARANCE	VISUAL INSPECTION	DEFECT FREE

14. CAUTION

14.1 OPERATION

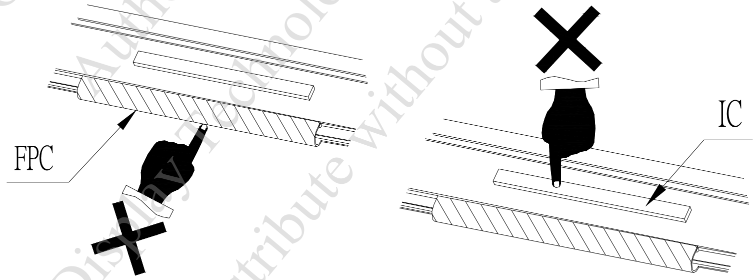
14.1.1 DO NOT CONNECT OR DISCONNECT MODULES TO OR FROM THEMAIN SYSTEM WHILE POWER IS BEING SUPPLIED .

14.1.2 USE THE MODULE WITHIN SPECIFIED TEMPERATURE ; LOWER TEMPERATURE CAUSES THE RETARDATION OF BLINKING SPEED OF THE DISPLAY ; HIGHER TEMPERATURE MAKES OVERALL DISPLAY DISCOLOR.
WHEN THE TEMPERATURE RETURNS TO NORMALITY, THE DISPLAY WILL OPERATE NORMALLY .

14.1.3 ADJUST THE LC DRIVING VOLTAGE TO OBTAIN THE OPTIMUM CONTRAST.

14.1.4 POWER ON SEQUENCE INPUT SIGNALS SHOULD NOT BE SUPPLIED TO LCD MODULE BEFORE POWER SUPPLY VOLTAGE IS APPLIED AND REACHES THE SPECIFIED VALUE .
IF ABOVE SEQUENCE IS NOT FOLLOWED , CMOS LSIS OF LCD MODULES MAY BE DAMAGED DUE TO LATCH - UP PROBLEM .

14.1.5 NOT ALLOWED TO INFLICT ANY EXTERNAL STRESS AND TO CAUSE ANY MECHANICAL INTERFERENCE ON THE BENDING AREA OF FPC DURING THE TAIL BENDING BACKWARDS!
DO NOT STRESS FPC AND IC ON THE MODULE!



14.2 HANDLING

14.2.1 USE A GROUNDED SOLDERING IRON WHEN SOLDERING CONNECTOR I/O TERMINALS . FOR SOLDERING OR REPAIRING, TAKE PRECAUTION AGAINST THE TEMPERATURE OF THE SOLDERING IRON AND THE SOLDERING TIME TO PREVENT PEELING OFF THE THROUGH-HOLE-PAD .

14.2.2 DO NOT DISASSEMBLE . EDT SHALL NOT BE HELD RESPONSIBLE IF THE MODULE IS DISASSEMBLED AND UPON THE REASSEMBLY THE MODULE FAILED .

14.2.3 DO NOT CHARGE STATIC ELECTRICITY , AS THE CIRCUIT OF THIS MODULE CONTAINS CMOS LSIS. A WORKMAN'S BODY SHOULD ALWAYS BE STATIC-PROTECTED BY USE OF AN ESD STRAP. WORKING CLOTHES FOR SUCH PERSONNEL SHOULD BE OF STATIC-PROTECTED MATERIAL.

14.2.4 ALWAYS GROUND THE ELECTRICALLY-POWERED DRIVER BEFORE USING IT TO INSTALL THE LCD MODULE. WHILE CLEANING THE WORK STATION BY VACUUM CLEANER, DO NOT BRING THE SUCKING MOUTH NEAR THE MODULE ; STATIC ELECTRICITY OF THE ELECTRICALLY-POWERED DRIVER OR THE VACUUM CLEANER MAY DESTROY THE MODULE .

14.2.5 DON'T GIVE EXTERNAL SHOCK.

14.2.6 DON'T APPLY EXCESSIVE FORCE ON THE SURFACE.

14.2.7 LIQUID IN LCD IS HAZARDOUS SUBSTANCE. MUST NOT LICK AND SWALLOW.
WHEN THE LIQUID IS ATTACH TO YOUR, SKIN, CLOTH ETC.
WASH IT OUT THOROUGHLY AND IMMEDIATELY.

14.2.8 DON'T OPERATE IT ABOVE THE ABSOLUTE MAXIMUM RATING.

14.2.9 STORAGE IN A CLEAN ENVIRONMENT, FREE FROM DUST, ACTIVE GAS AND SOLVENT.

14.2.10 STORE WITHOUT ANY PHYSICAL LOAD.

14.2.11 REWIRING: NO MORE THAN 3 TIMES.