EXAMINED BY : Vincent Wu	EMERGING DISPLAY TECHNOLOGIES CORPORATION	FILE NO . CAS-0007335
		ISSUE : JUL.27, 2011
APPROVED BY: David Chang		TOTAL PAGE : 30
		VERSION : 2

CUSTOMER ACCEPTANCE SPECIFICATIONS

MODEL NO. :

ETM0430G0DH6
(RoHS)

FOR MESSRS :

____

CUSTOMER'S APPROVAL

DATE :

____

BY :

____

RECORDS OF REVISION

DOC . FIRST ISSUE

JUL.13, 2011

DATE	REVISED PAGE NO.	SUMMARY
JUL.27, 2011	9	6.1 OPTICAL CHARACTERISTICS THE BRIGHTNESS OF MODULE：MIN.=340→356, TYP.=374→391
	12,14	8. BLOCK DIAGRAM & 10. INTERFACE SIGNALS PIN 1：/RST → NC, PIN 2：VSS → /RST

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1 . 1 DATA SHEET FOR LCD MODULE CONTROLLER/DRIVER PLEASE REFER TO：

HIMAX HX8257-A

1 . 2 DATA SHEET FOR CAPACITIVE TOUCH PANEL CONTROLLER/DRIVER PLEASE REFER TO：

FOCALTECH FT5306

1 . 3 PLEASE REFER TO EDT APPLICATION NOTE FOR EP0430M06

1 . 4 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)

2 . MECHANICAL SPECIFICATIONS

2.1 LCD MODULE MECHANICAL SPECIFICATIONS

(1) DIAGONALS ---------------------------------- 4.3 inch
(2) NUMBER OF DOTS ------------------------- 480W * (RGB) * 272H DOTS
(3) MODULE SIZE ------------------------------ 105.5W * 67.2H *9.56D(MAX.) mm (WITHOUT FPC)
(4) EFFECTIVE AREA ------------------------- 98.7W * 56.4H mm
(5) ACTIVE AREA ------------------------------- 95.04W * 53.856H mm
(6) DOT SIZE ------------------------------------ 0.066W * 0.198H mm
(7) PIXEL SIZE ---------------------------------- 0.198W * 0.198H mm
(8) LCD TYPE ----------------------------------- TFT , TRANSMISSIVE
(9) COLOR -- 262K
(10) VIEWING DIRECTION --------------------- 6 O’CLOCK
(11) BACK LIGHT -------------------------------- LED , COLOR : WHITE
(12) INTERFACE MODE ------------------------- RGB 18 BIT PARALLEL

2 . 2 CAPACITIVE TOUCH PANEL MECHANICAL SPECIFICATIONS

(1) TOUCH PANEL SIZE ---------------------------- 4.3 inch

(2) OUTER DIMENSION ---------------------------- 103.1W * 65.4H * 1.41D mm
(WITHOUT FPC)

(3) EFFECTIVE AREA ---------------------------- 97W * 56H mm

(4) ACTIVE AREA ---------------------------------- 96W * 55H mm

(5) INPUT TYPE ------------------------------------- MULTI TOUCH

(6) NUMBER OF TOUCH SENSOR ------------------ 20*12 SENSORS

(7) RESOLUTION ---------------------------------- 1280 * 768

(8) INTERFACE MODE --------------------------- I2C & SPI

3 . ABSOLUTE MAXIMUM RATINGS

3 . 1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	MIN.	MAX.	UNIT	REMARK
POWER SUPPLY VOLTAGE	VDD-VSS	-0.3	3.6	V	
	VCC-VSS	-0.3	6.0	V	
STATIC ELECTRICITY	—	—	—	V	NOTE (1)
LED BACKLIGHT POWER DISSIPATION	PD	—	1.3	W	
LED BACKLIGHT FORWARD CURRENT	IF	—	60	mA	

NOTE (1):LCD SHOULD BE GROUNDED DURING HANDING LCM.

3 . 2 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS.

ITEM	OPERATING		STORAGE		REMARK
	MIN.	MAX.	MIN.	MAX.	
AMBIENT TEMPERATURE	-20°C	70°C	-30°C	80°C	NOTE (1) , (2)
HUMIDITY	NOTE (3)		NOTE (3)		WITHOUT CONDENSATION
VIBRATION	—	3.92 m/s^2 (0.4 G)	—	19.60 m/s^2 (2.0 G)	10~55Hz X, Y, Z EACH 2HRS
SHOCK	—	58.8 m/s^2 (6 G)	—	980.0 m/s^2 (100 G)	6 ms XYZ DIRECTIONS 3 TIMES EACH
CORROSIVE GAS	NOT ACCEPTABLE		NOT ACCEPTABLE		

NOTE (1) : Ta AT -30°C : WILL BE 48HRS MAX .
80°C : WILL BE 168HRS MAX .
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 60°C (96HRS MAX).

4. ELECTRICAL CHARACTERISTICS

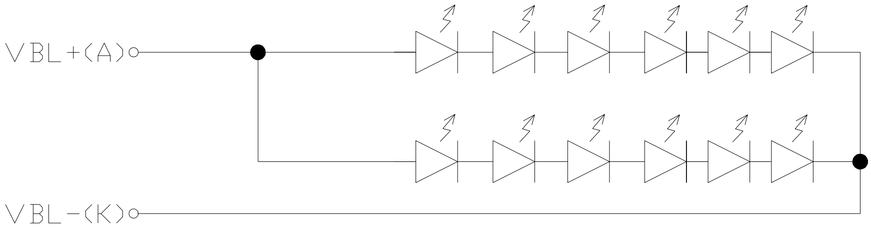
Ta = 25 °C

PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	REMARK
POWER SUPPLY VOLTAGE	VDD-VSS	—	3.0	3.3	3.6	V	
POWER SUPPLY VOLTAGE FOR LED DRIVER	VCC-VSS	—	2.7	3.3	5.5	V	
LOGIC HIGH INPUT VOLTAGE	VIH	—	0.7*VDD	—	VDD	V	NOTE (1)
LOGIC LOW INPUT VOLTAGE	VIL	—	0	—	0.3*VDD	V	
POWER SUPPLY CURRENT	IDD	VDD-VSS=3.3V	—	27	38	mA	NOTE (2)
POWER SUPPLY CURRENT FOR LED DRIVER	ICC	VCC-VSS=3.3V LED B/L=ON	—	390	510	mA	
POWER SUPPLY FOR LED BACKLIGHT	$V_{BL}+-V_{BL}-$	IF = 36mA	17.4	19.8	21.6	V	NOTE (3)
LED LIFE TIME	—	—	30K	40K	—	HRS	

NOTE (1) : APPLIED TO TERMINALS B5~B0, G5~G0, R5~R0, DCLK, HSYNC, VSYNC, ENB.

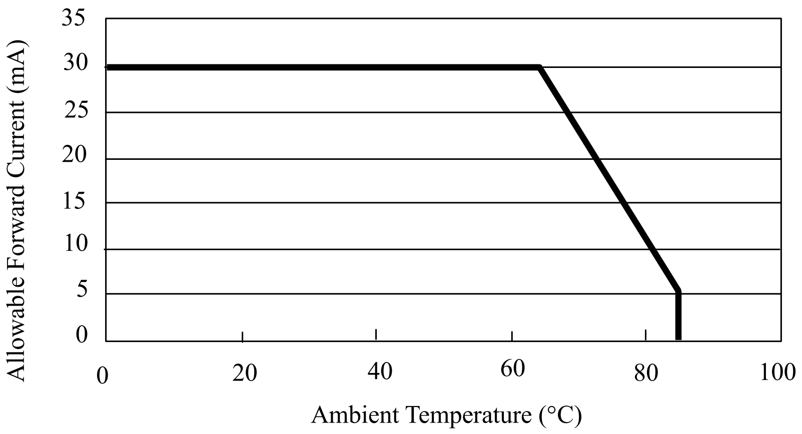
NOTE (2) : THE DISPLAY PATTERN IS ALL "WHITE"

NOTE (3) : INTERNAL CIRCUIT DIAGRAM OF BACKLIGHT



12 LED CHIPS

NOTE (4) : AMBIENT TEMP. VS. ALLOWABLE FORWARD CURRENT.(PER LED)



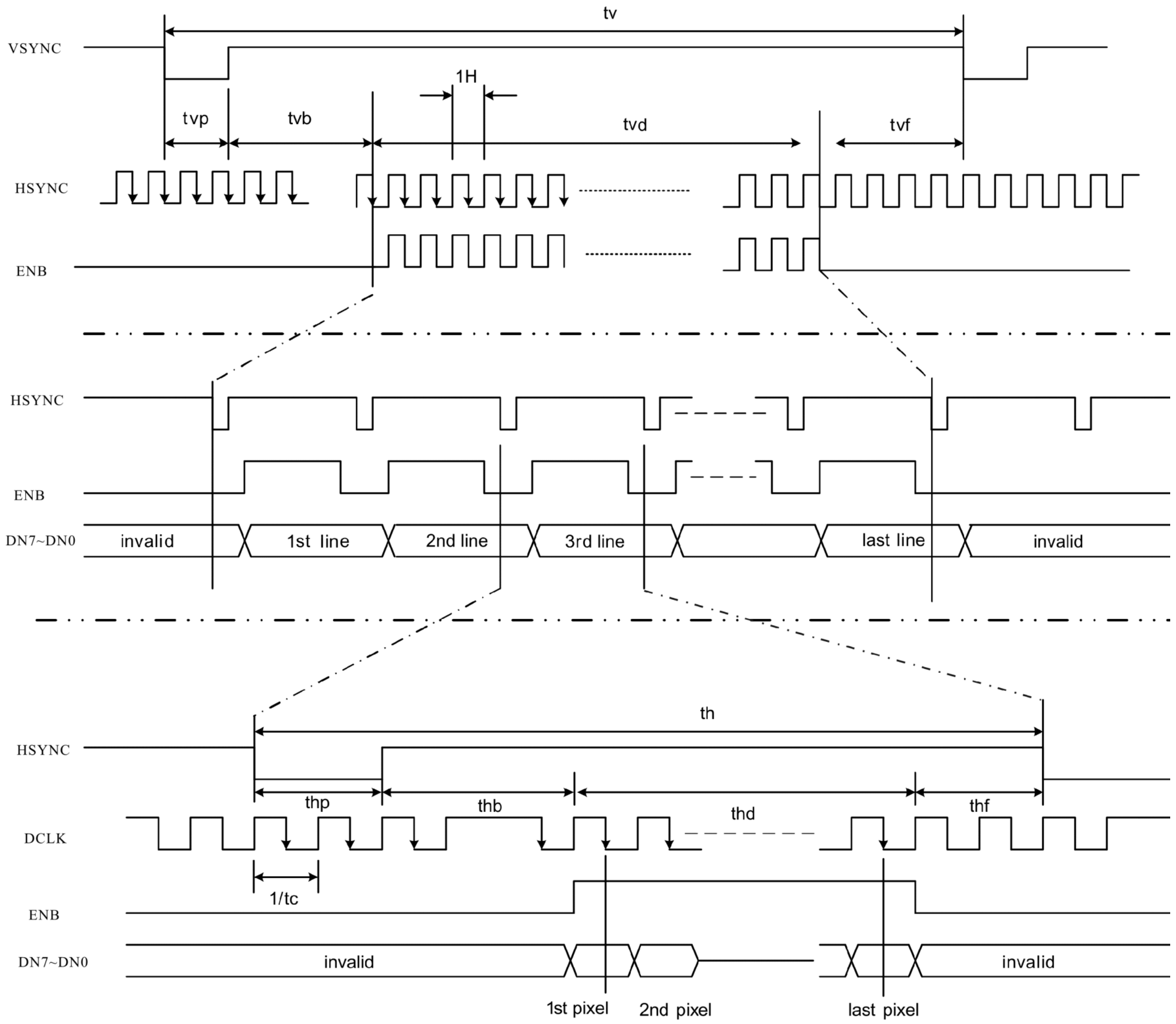
5 . LCD MODULE TIMING CHARACTERISTICS

THE HX8257-A BOTH SUPPORTS DE MODE AND SYNC MODE TIMING. THE MODE WAS DECIDED BY DE SIGNAL INTERNALLY. WHEN DE IS PULLED LOW, THE HX8257-A USES HS+VS FOR TIMING CONTROL AND THIS TIMING MODE IS SYNC MODE. WHEN DE IS PULLED HIGH FOR ACTIVE DATA AND PULLED LOW FOR BLANKING DATA, THE HX8257-A USES DE FOR TIMING CONTROL AND THIS TIMING MODE IS DE MODE. THE DETAIL TIMING CHART SHOWED BELOW.

5.1 LCD MODULE PARALLEL RGB INPUT TIMING REQUIREMENT

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
CLOCK CYCLE	$f_{CLK}^{(1)}$	—	9	15	MHz
HSYNC CYCLE	1/th	—	17.14	—	KHz
VSYNC CYCLE	1/tv	—	59.94	—	Hz
HORIZONTAL SIGNAL					
HORIZONTAL CYCLE	th	525	525	605	CLK
HORIZONTAL DISPLAY PERIOD	thd	480	480	480	CLK
HORIZONTAL FRONT PORCH	thf	2	2	82	CLK
HORIZONTAL PULSE WIDTH	$thp^{(2)}$	2	41	41	CLK
HORIZONTAL BACK PORCH	$thb^{(2)}$	2	2	41	CLK
VERTICAL SIGNAL					
VERTICAL CYCLE	tv	285	286	399	$H^{(1)}$
VERTICAL DISPLAY PERIOD	tvd	272	272	272	$H^{(1)}$
VERTICAL FRONT PORCH	tvf	1	2	227	$H^{(1)}$
VERTICAL PULSE WIDTH	$tvp^{(2)}$	1	10	11	$H^{(1)}$
VERTICAL BACK PORCH	$tvb^{(2)}$	1	2	11	$H^{(1)}$

NOTE：1.UNIT: CLK=1/ f_{CLK} , H=th,
2. IT IS NECESSARY TO KEEP tvp+tvb=12 AND thp+thb=43 IN SYNC MODE. DE MODE IS UNNECESSARY TO KEEP IT.

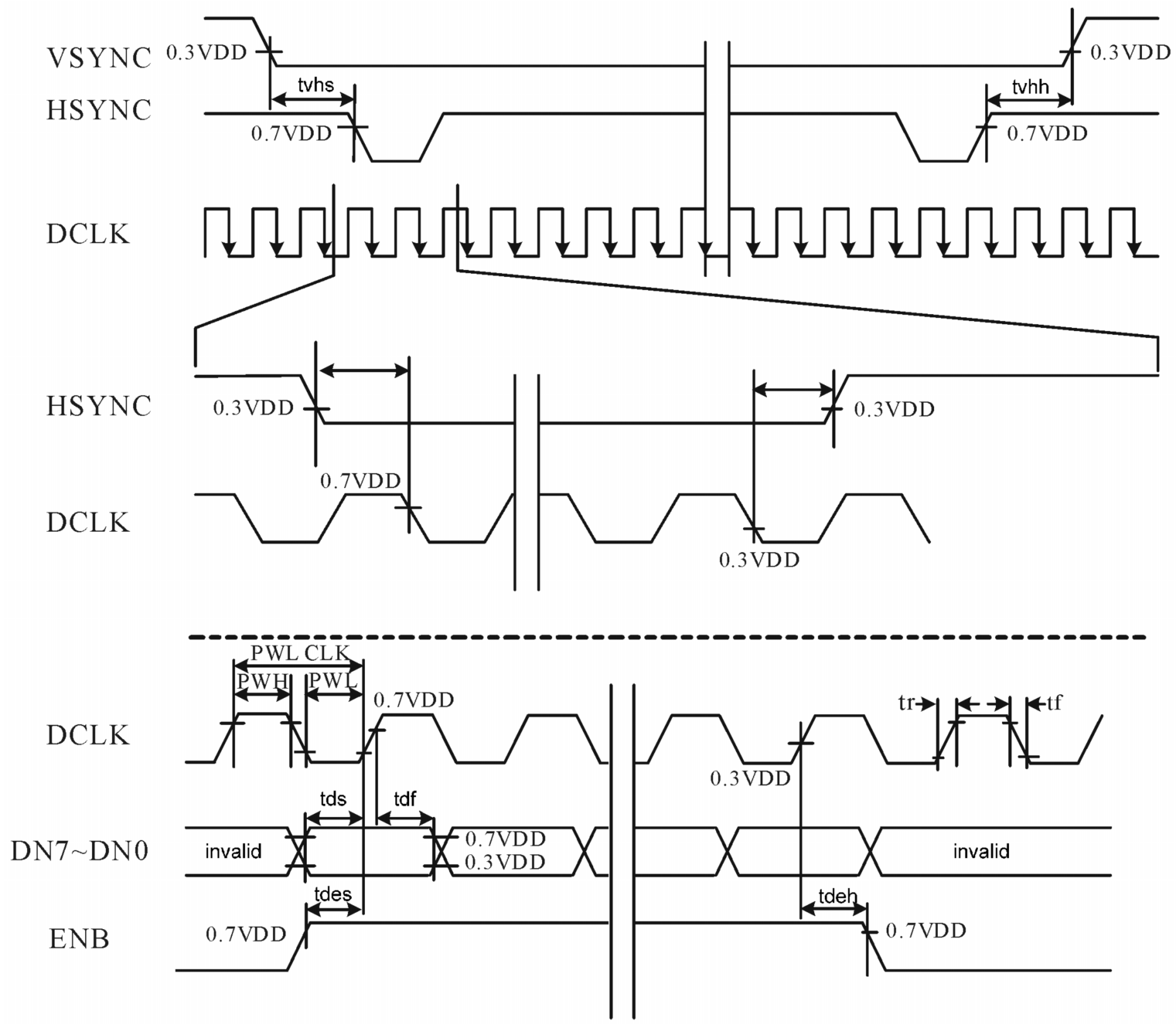

tv
VSYNC
1H
tvp
tvb
tvd
tvf
HSYNC
ENB
HSYNC
ENB
DN7~DN0
invalid
1st line
2nd line
3rd line
last line
invalid
th
HSYNC
thp
thb
thd
thf
DCLK
1/tc
ENB
DN7~DN0
invalid
invalid
1st pixel
2nd pixel
last pixel

5.2 LCD MODULE INPUT SETUP TIMING REQUIREMENT

(tr(1) = tf(1) =2ns)

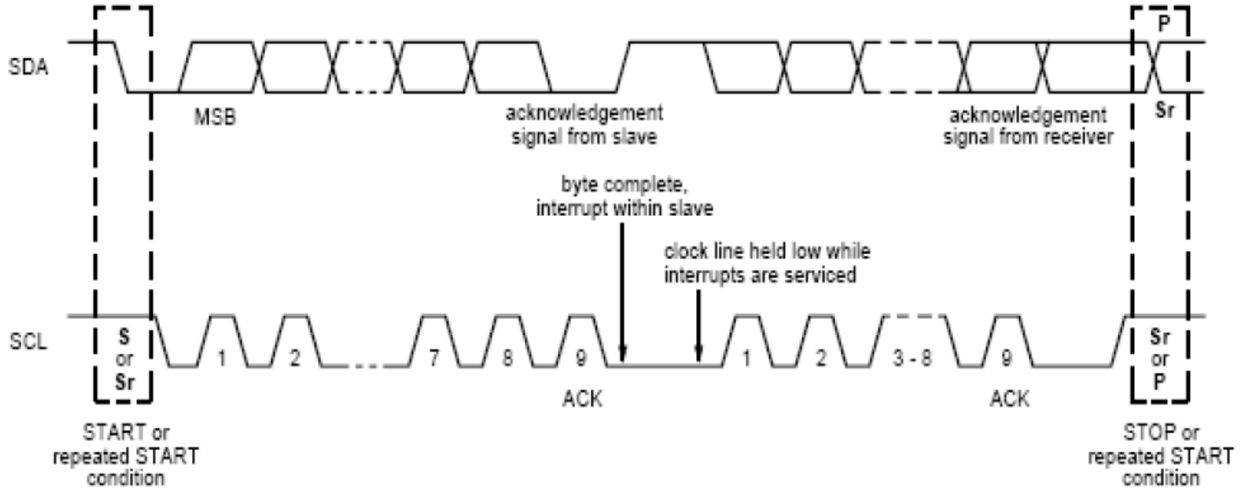
ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
CLOCK PERIOD	PW_{CLK} (2)	66.7	—	—	ns
CLOCK PULSE HIGH PERIOD	PWH (2)	26.7	—	—	ns
CLOCK PULSE LOW PERIOD	PWL (2)	26.7	—	—	ns
HSYNC SETUP TIME	t_{hs}	10	—	—	ns
HSYNC HOLD TIME	t_{hh}	10	—	—	ns
DATA SETUP TIME	t_{ds}	10	—	—	ns
DATA HOLD TIME	t_{dh}	10	—	—	ns
ENB SETUP TIME	t_{des}	10	—	—	ns
ENB HOLD TIME	t_{deh}	10	—	—	ns
VSYNC SETUP TIME	t_{vhs}	10	—	—	ns
VSYNC HOLD TIME	t_{vhh}	10	—	—	ns

NOTE : 1. tr, tf IS DEFINED 10% TO 90% OF SIGNAL AMPLITUDE.
2. FOR PARALLEL INTERFACE, MAXIMUM CLOCK FREQUENCY IS 15MHz.



5.3 CAPACITIVE TOUCH PANEL I2C INTERFACE TIMING CHARACTERISTICS

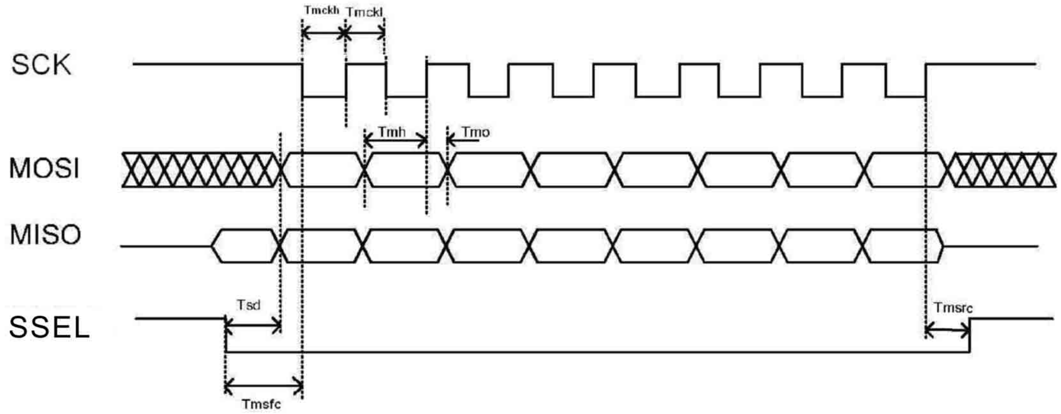
ITEM	MIN.	TYP.	MAX.	UNIT
SCL FREQUENCY	0	—	400	KHz
BUS FREE TIME BETWEEN A STOP AND START CONDITION	4.7	—	—	us
HOLD TIME (REPEATED) START CONDITION	4.0	—	—	us
DATA SETUP TIME	250	—	—	ns
SETUP TIME FOR A REPEATED START CONDITION	4.7	—	—	us
SETUP TIME FOR STOP CONDITION	4.0	—	—	us



5.4 CAPACITIVE TOUCH PANEL SPI INTERFACE TIMING CHARACTERISTICS

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
SCK HIGH TIME	Tmckh	4×Tsysclk	—	—	ns
SCK LOW TIME	Tmckl	4×Tsysclk	—	—	ns
SCK SHIFT EDGE TO MOSI DATA CHANGE	Tmo	0	—	—	ns
MOSI DATA VALID TO SCK SHIFT EDGE	Tmh	3×Tsysclk	—	—	ns
SSEL FALLING EDGE TO MOSI DATA VALID	Tsd	4×Tsysclk	—	—	ns
SSEL FALLING EDGE TO FIRST SCK EDGE	Tmsfc	(Tmckh+ Tmckl) /2	—	—	ns
LAST SCK EDGE TO SSEL RISING EDGE	Tmsrc	(Tmckh+ Tmckl) /2	—	—	ns

NOTE (1)：Tsysclk IS EQUAL TO ONE PERIOD OF THE DEVICE SYSTEM CLOCK(24MHz)



SPI master Timing PHASE=0 , POLCK=1

6. OPTICAL CHARACTERISTICS (NOTE 1)

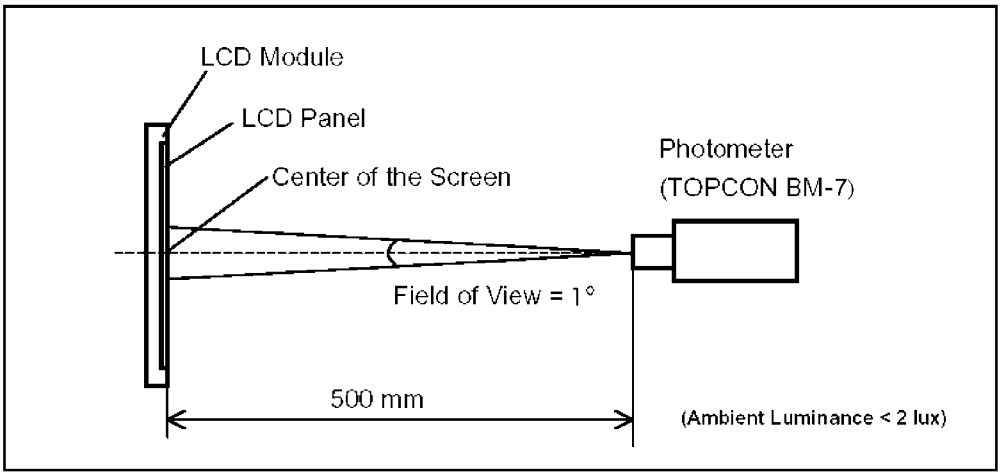
6.1 OPTICAL CHARACTERISTICS

Ta = 25°C

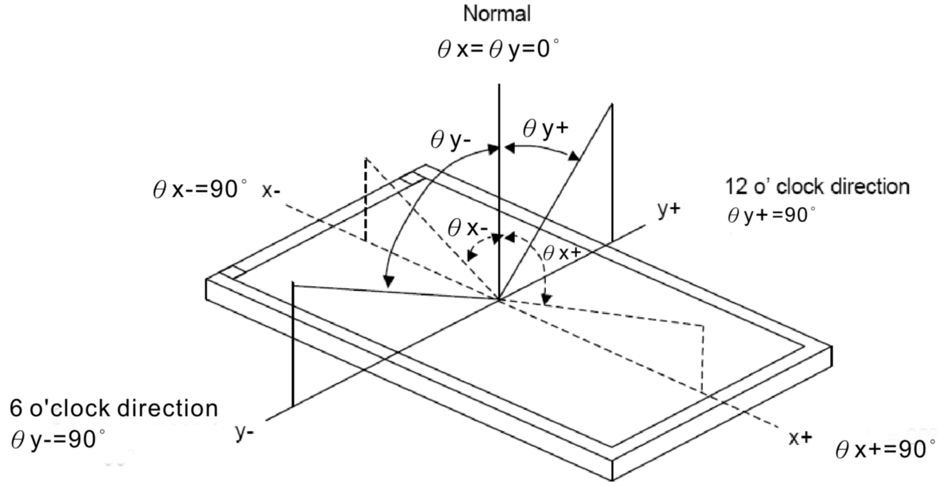
ITEM		SYMBOL	CONDITION		MIN.	TYP.	MAX.	UNIT	REMARK
VIEWING ANGLE		θ_{y+}	CR ≥ 10	θ_x=0°	56	63	—	deg.	NOTE (2) NOTE (3)
		θ_{y-}			68	75	—		
		θ_{x+}		θ_y=0°	68	75	—		
		θ_{x-}			68	75	—		
CONTRAST RATIO		CR	θx=0° , θy=0°		300	450	—	—	NOTE (3)
RESPONSE TIME		T_R (rise)	θx=0° , θy=0°		—	5	—	msec	NOTE (4)
		T_F (fall)			—	15	—		
COLOR OF CIE COORDINATE	WHITE	Wx	θx=0° , θy=0° IF = 36mA (NTSC : 55%)		0.26	0.31	0.36	—	NOTE (5)
		Wy			0.28	0.33	0.38		
	RED	Rx			0.55	0.60	0.65	—	
		Ry			0.28	0.33	0.38		
	GREEN	Gx			0.28	0.33	0.38	—	
		Gy			0.49	0.54	0.59		
	BLUE	Bx			0.09	0.14	0.19	—	
		By			0.04	0.09	0.14		
THE BRIGHTNESS OF MODULE		B	θx=0° , θy=0° IF = 36mA		356	391	—	cd/m^2	NOTE (6)
THE UNIFORMITY OF MODULE		—			70	75	—	%	

NOTE (1) : TEST EQUIPMENT SETUP :

AFTER STABILIZING AND LEAVING THE PANEL ALONE AT A GIVEN TEMPERATURE FOR 30 MINUTES, THE MEASUREMENT SHOULD BE EXECUTED. MEASUREMENT SHOULD BE EXECUTED IN A STABLE, WINDLESS, AND DARK ROOM. OPTICAL SPECIFICATIONS ARE MEASURED BY TOPCON BM-7 (FAST) WITH A VIEWING ANGLE OF 1° AT A DISTANCE OF 50cm AND NORMAL DIRECTION.



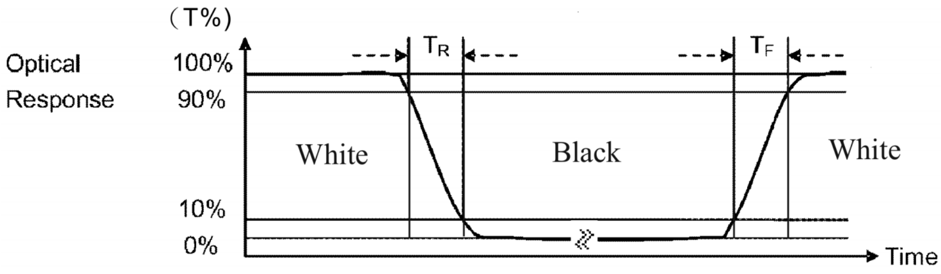
NOTE (2)：DEFINITION OF VIEWING ANGLE :



NOTE (3)：DEFINITION OF CONTRAST RATIO :

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

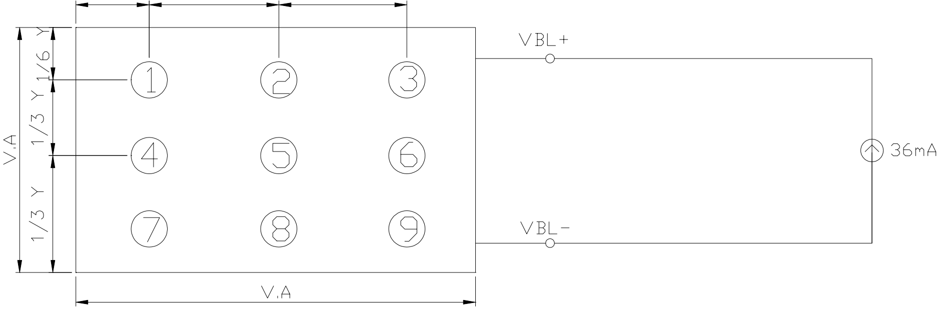
NOTE (4)：DEFINITION OF RESPONSE TIME：T_R AND T_F
THE FIGURE BELOW IS THE OUTPUT SIGNAL OF THE PHOTO DETECTOR.



NOTE (5)：THE 100% TRANSMISSION IS DEFINED AS THE TRANSMISSION OF LCD PANEL WHEN ALL THE INPUT TERMINALS OF MODULE ARE ELECTRICALLY OPENED.

NOTE (6)：BRIGHTNESS MEASURED WHEN LCD IS AT “WHITE STATE”.

6.2 THE TEST METHOD OF BRIGHTNESS AND UNIFORMITY.

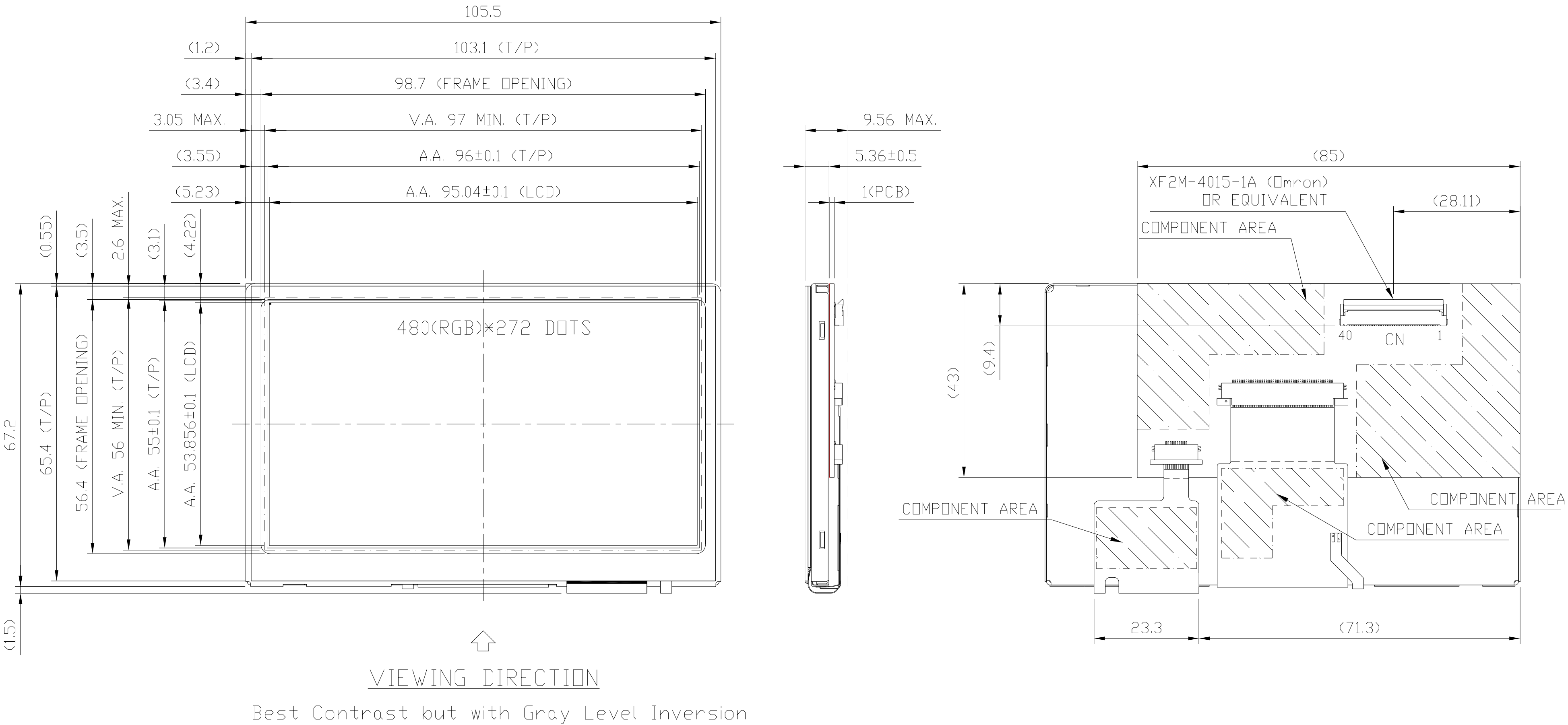


UNIT：mm

6.3 THE CALCULATING OF METHOD UNIFORMITY

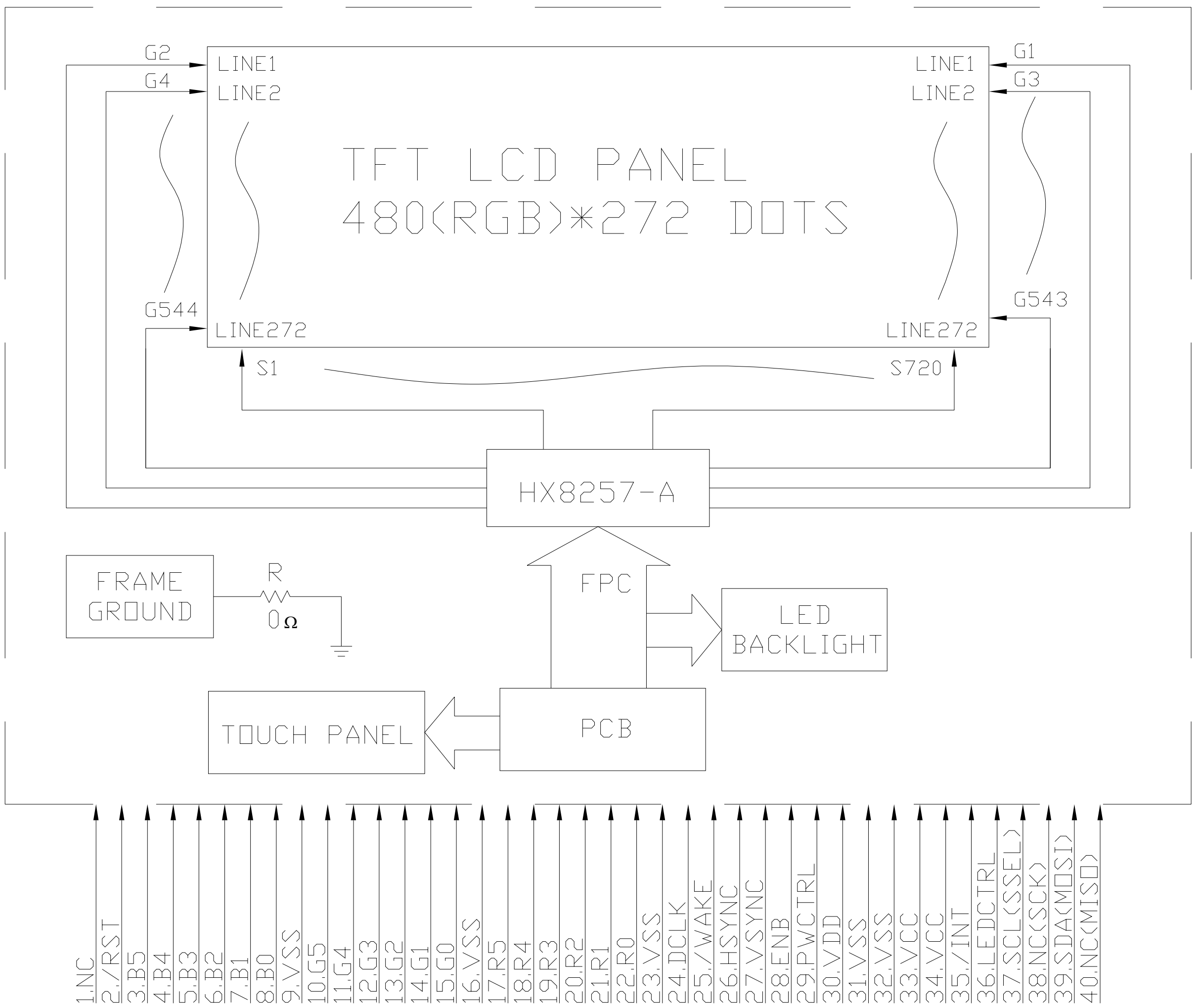
$$\text{UNIFORMITY}: \left[1 - \frac{\text{MAXIMUM BRIGHTNESS} - \text{MINIMUM BRIGHTNESS}}{\text{AVERAGE BRIGHTNESS}}\right] \times 100\%$$

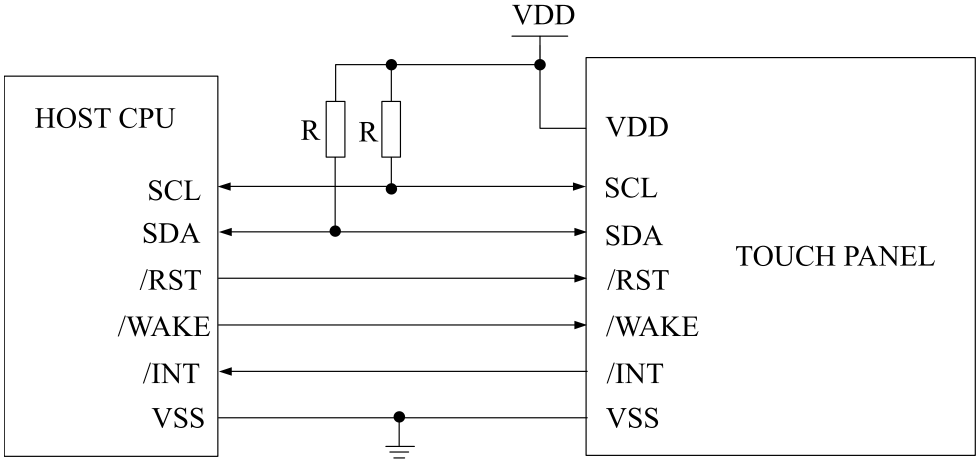
7. OUTLINE DIMENSIONS



UNIT : mm
SCALE : NTS
NOT SPECIFIED TOLERANCE IS ±0.3mm

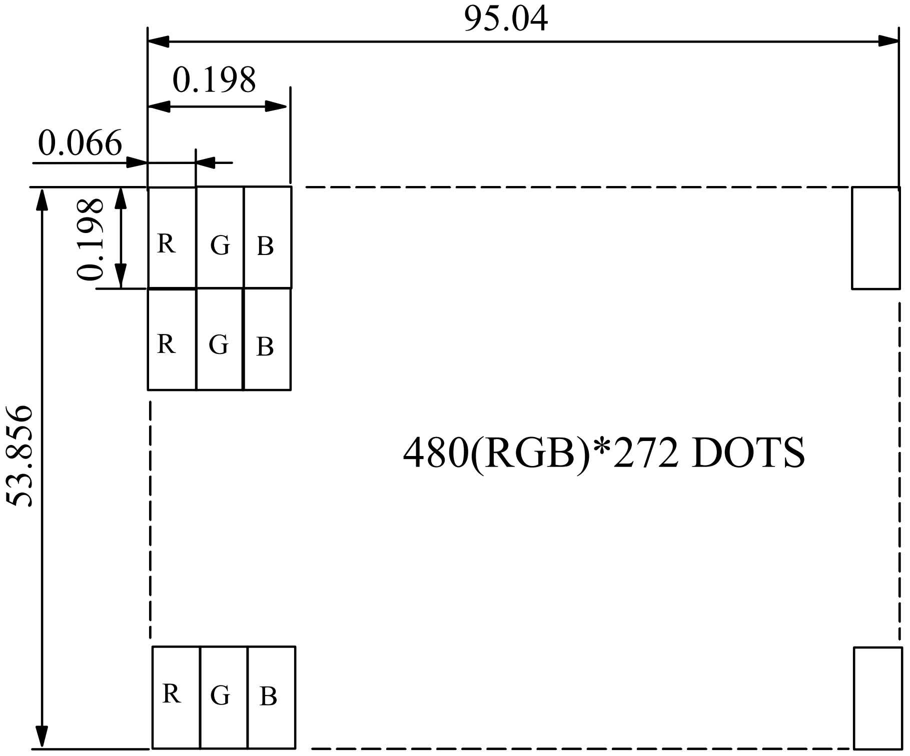
8. BLOCK DIAGRAM





NOTE： VALUE OF PULL-UP RESISTORS(R) DEPENDS ON CLOCK SPEED, NUMBER OF CHIPS ON THE I2C BUS AND NOISE LEVEL. LOW SPEED 4.7K TO 10K OR HIGHER, HIGH SPEED 1K TO 4.7K OR HIGHER. SIGNALS SHOULD BE MEASURED WITH AN OSCILLOSCOPE TO VERIFY WAVEFORM AND HIGH / LOW LEVELS.

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

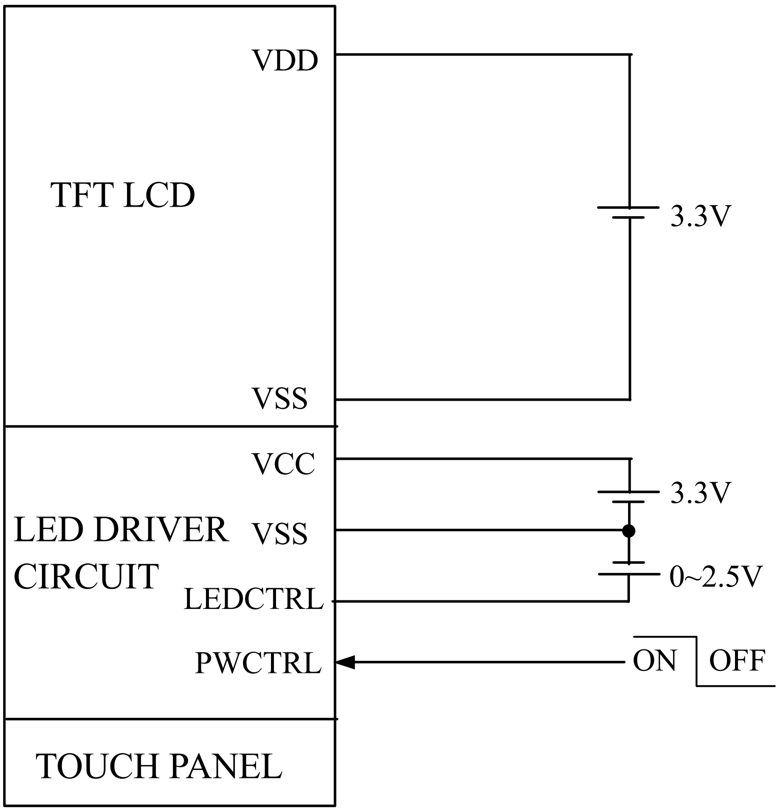
PIN NO	SYMBOL	I/O/P	FUNCTION	
1	NC	—	NON CONNECTION	
2	/RST	I	EXTERNAL RESET, LOW IS ACTIVE	TOUCH PANEL
3	B5	I	BLUE DATA BIT 5	
4	B4	I	BLUE DATA BIT 4	
5	B3	I	BLUE DATA BIT 3	
6	B2	I	BLUE DATA BIT 2	
7	B1	I	BLUE DATA BIT 1	
8	B0	I	BLUE DATA BIT 0	
9	VSS	P	GROUND (VSS IS CONNECTED TO METAL HOUSING WITH CONDUCTIVE TAPE)	
10	G5	I	GREEN DATA BIT 5	
11	G4	I	GREEN DATA BIT 4	
12	G3	I	GREEN DATA BIT 3	
13	G2	I	GREEN DATA BIT 2	
14	G1	I	GREEN DATA BIT 1	
15	G0	I	GREEN DATA BIT 0	
16	VSS	P	GROUND (VSS IS CONNECTED TO METAL HOUSING WITH CONDUCTIVE TAPE)	
17	R5	I	RED DATA BIT 5	
18	R4	I	RED DATA BIT 4	
19	R3	I	RED DATA BIT 3	
20	R2	I	RED DATA BIT 2	
21	R1	I	RED DATA BIT 1	
22	R0	I	RED DATA BIT 0	
23	VSS	P	GROUND (VSS IS CONNECTED TO METAL HOUSING WITH CONDUCTIVE TAPE)	
24	DCLK	I	DOT DATA CLOCK	
25	/WAKE	I	EXTERNAL INTERRUPT FROM THE HOST	TOUCH PANEL
26	HSYNC	I	HORIZONTAL SYNC INPUT WITH NEGATIVE POLARITY. INTERNALLY PULL HIGH.	
27	VSYNC	I	VERTICAL SYNC INPUT WITH NEGATIVE POLARITY. INTERNALLY PULL HIGH.	
28	ENB	I	INPUT DATA ENABLE CONTROL. INTERNALLY PULLED LOW.	

<table>
<tr><th>PIN NO.</th><th>SYMBOL</th><th>I/O/P</th><th colspan="2">FUNCTION</th></tr>
<tr><td>29</td><td>PWCTRL</td><td>I</td><td colspan="2"><table><tr><th></th><th>PWCTRL</th><th>REMARK</th></tr><tr><td rowspan="2">LOGIC
LEVEL
H=3.3V
L=0V</td><td>H</td><td>POWER ON</td></tr><tr><td>L</td><td>SHUTDOWN</td></tr></table></td></tr>
<tr><td>30</td><td>VDD</td><td>P</td><td colspan="2">POWER SUPPLY VOLTAGE</td></tr>
<tr><td>31</td><td>VSS</td><td>P</td><td colspan="2">GROUND (VSS IS CONNECTED TO METAL HOUSING WITH CONDUCTIVE TAPE)</td></tr>
<tr><td>32</td><td>VSS</td><td>P</td><td colspan="2">GROUND (VSS IS CONNECTED TO METAL HOUSING WITH CONDUCTIVE TAPE)</td></tr>
<tr><td>33</td><td>VCC</td><td>P</td><td colspan="2">POWER SUPPLY FOR LED DRIVER CIRCUIT</td></tr>
<tr><td>34</td><td>VCC</td><td>P</td><td colspan="2">POWER SUPPLY FOR LED DRIVER CIRCUIT</td></tr>
<tr><td>35</td><td>/INT</td><td>O</td><td>EXTERNAL INTERRUPT TO THE HOST</td><td>TOUCH PANEL</td></tr>
<tr><td>36</td><td>LEDCTRL</td><td>I</td><td colspan="2">BRIGHTNESS CONTROL FOR LED BACKLIGHT</td></tr>
<tr><td>37</td><td>SCL(SSEL)</td><td>I/O</td><td>I2C CLOCK INPUT
(ACTIVE LOW SELECT SIGNAL)</td><td rowspan="4">TOUCH PANEL</td></tr>
<tr><td>38</td><td>NC(SCK)</td><td>—</td><td>NC (SERIAL DATA CLOCK)</td></tr>
<tr><td>39</td><td>SDA(MOSI)</td><td>I/O</td><td>I2C DATA INPUT AND OUTPUT
(DATA LINE FROM MASTER TO SLAVE)</td></tr>
<tr><td>40</td><td>NC(MISO)</td><td>—</td><td>NC (DATA LINE FROM SLAVE TO MASTER)</td></tr>
</table>

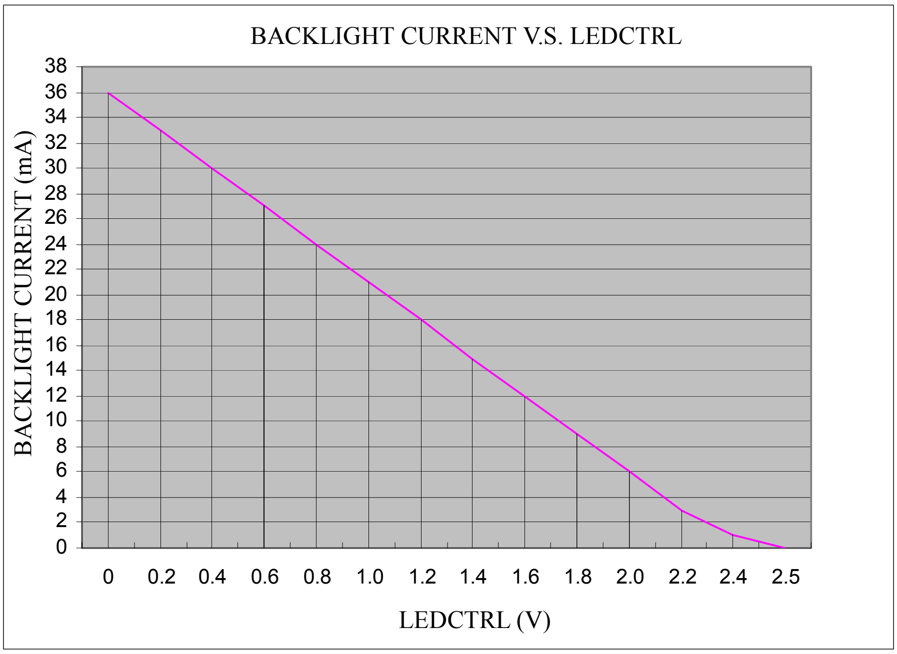
NOTE：PIN NAMES IN( ) IS FOR SPI TYPE INTERFACE INTERNAL PULL UP ON PIN 37~40 (100KΩ)

11 . POWER SUPPLY

11.1 POWER SUPPLY FOR LCM



11.2 THE BRIGHTNESS CONTROLLED BY BACKLIGHT CURRENT OF LEDCTRL.



12. CAPACITIVE TOUCH PANEL SPECIFICATION

12.1 OPTICAL CHARACTERISTICS

ITEM	CONDITION	MIN.	TYP.	MAX.	UNIT
TRANSPARENCY NOTE (1)	Ta = 25°C	85	—	—	%

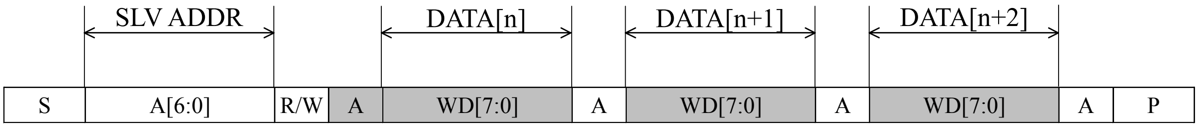
NOTE (1) : OPTICAL MEASUREMENT SHOULD BE EXECUTED AFTER PANEL IS SECURED. MEASUREMENT PROCESS SHOULD BE EXECUTED IN A STABLE, WINDLESS, AND DARK ROOM. OPTICAL SPECIFICATIONS SHOULD BE MEASURED BY SPECTROPHOTOMETER.

12.2 HARDNESS

ITEM	DESCRIPTION
SURFACE HARDNESS	7H (MIN.)

12.3 PROTOCOL

12.3.1 I2C READ



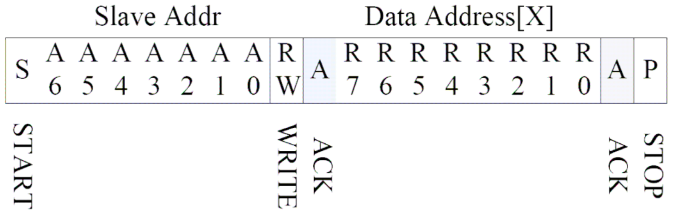
CHARACTER	DESCRIPITION
S	I2C START OR I2C RESTART
A[6:0]	SLAVE ADDRESS
R /W	“1”=READ ; “0”=WRITE
A	ACK SIGNAL
P	STOP SIGNAL (STOP SIGNAL IS OPTIONAL, RESTART SIGNAL IS ALSO OK FOR NEXT PACKET)

SLAVE ADDRESS=0x38

12.3.2 INTERRUPT SIGNAL FROM CTPM TO HOST

AS FOR STANDARD CTPM, HOST NEED TO USE BOTH INTERRUPT CONTROL SIGNAL AND SERIAL DATA INTERFACE TO GET THE TOUCH DATA.HERE IS THE TIMING TO GET TOUCH DATA

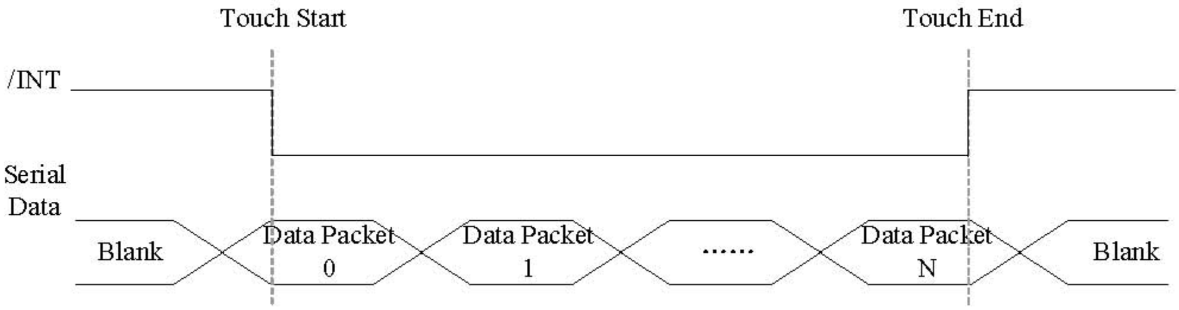
WRITE N BYTES TO I2C SLAVE



READ X BYTES FROM I2C SLAVE

12.3.3 INTERRUPT SIGNAL FROM CTPM TO HOST

AS FOR STANDARD CTPM, HOST NEED TO USE BOTH INTERRUPT CONTROL SIGNAL AND SERIAL DATA INTERFACE TO GET THE TOUCH DATA.HERE IS THE TIMING TO GET TOUCH DATA.



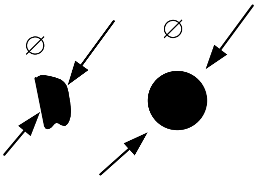
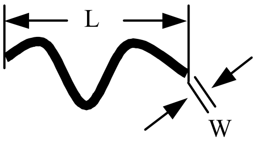
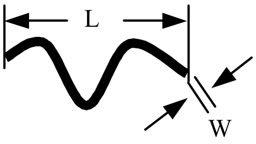
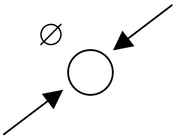
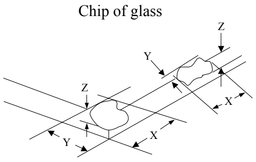
TOUCH DATA READ PROTOCOL

NAME	VALUE	DESCRIPTION
START CH	0xF9	START COMMAND FOR CTPM TOUCH DATA PACKET, HOST MUST SEND CTPM A START CH COMMAND BEFORE READ TOUCH DATA
1st READ BYTE ~ LAST READ BYTE		TOUCH DATA PACKET SENT BY CTPM, EACH BYTE HAS 8-BIT DATA, A TOUCH DATA PACKET CONSISTS OF N BYTE.

A DATA PACKET STARTS WITH A HEADER AND ENDS WITH CRC CODE. AS FOR 5 POINTS DATA PACKET, THE LENGTH OF THE PACKET IS ALWAYS 26 BYTES IN SPITE OF ACTUAL TOUCH POINTS.

NAME	LENGTH (BYTE)	VALUE	DESCRIPTION
HEAD	2	0xAAAA	HEADER OF TOUCH DATA
BYTE0	1	0b00xx_xxxx	THE PACKET LENGTH WHICH STORES IN THE LOWER 6 BIT, 26 HERE.
BYTE1	1	0b0000_xxxx	ACTUAL TOUCH POINTS WHICH STORES IN THE LOWER 4 BIT.
BYTE2	1	0x00	RESERVED.
X1	2	0x0XXX	HORIZONTAL COORDINATE OF TOUCH POINT 1(12 BIT), CORRESPONDING TO THE HORIZONTAL CORRDINATE OF DISPLAY SCREEN.
Y1	2	0x0XXX	VERTICAL COORDINATE OF TOUCH POINT 1(12 BIT), CORRESPONDING TO THE HORIZONTAL CORRDINATE OF DISPLAY SCREEN.
X2	2	0x0XXX	HORIZONTAL COORDINATE OF TOUCH POINT 2
Y2	2	0x0XXX	VERTICAL COORDINATE OF TOUCH POINT 2
X3	2	0x0XXX	HORIZONTAL COORDINATE OF TOUCH POINT 3
Y3	2	0x0XXX	VERTICAL COORDINATE OF TOUCH POINT 3
X4	2	0x0XXX	HORIZONTAL COORDINATE OF TOUCH POINT 4
Y4	2	0x0XXX	VERTICAL COORDINATE OF TOUCH POINT 4
X5	2	0x0XXX	HORIZONTAL COORDINATE OF TOUCH POINT 5
Y5	2	0x0XXX	VERTICAL COORDINATE OF TOUCH POINT 5
CRC	1	0xXXX	CRC CODE FOR PREVIOUS N-1 DATA, FOR THE DATA VALIDATION. CRC CODE IS EQUAL TO THE XOR RESULT OF PREVIOUS 25 BYTE.

1 2 .4 INSPECTION STANDARDS

<table>
<tr><th>INSPECTION ITEMS</th><th>CRITERIA</th><th>REMARK</th></tr>
<tr><td>BLACK/WHITE SPOT</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≤0.1mm</td><td>IGNORE</td></tr>
<tr><td>0.1mm<D≤0.3mm</td><td>2</td></tr>
<tr><td>0.3mm<D≤0.5mm</td><td>1</td></tr>
<tr><td>D>0.5 mm</td><td>0</td></tr>
</table>
NOTE (1)：THE DISTANCE BETWEEN DOT EDFECTS SHOULD BE MORE THAN 10mm APART.</td><td>
</td></tr>
<tr><td>SCRATCH</td><td>THE FOLLOWING BLACK LINE, WHITE LINE IS WITHIN THE VIEWING AREA.
WIDTH：W (mm) , LENGH：L (mm)
<table>
<tr><th>SIZE W & L</th><th>PERMISSIBLE NO.</th></tr>
<tr><td>W≤0.05mm</td><td>IGNORE</td></tr>
<tr><td>0.05mm<W≤0.07mm, L≤5mm</td><td>1</td></tr>
<tr><td>W>0.07mm</td><td>0</td></tr>
</table></td><td>
</td></tr>
<tr><td>LINEAR TYPE / FOREIGN FIBER</td><td>THE FOLLOWING BLACK LINE, WHITE LINE IS WITHIN THE VIEWING AREA.
WIDTH：W (mm) , LENGH：L (mm)
<table>
<tr><th>SIZE W & L</th><th>PERMISSIBLE NO.</th></tr>
<tr><td>W≤0.05mm</td><td>IGNORE</td></tr>
<tr><td>0.05mm<W≤0.07mm, L≤5mm</td><td>1</td></tr>
<tr><td>W>0.07mm</td><td>0</td></tr>
</table></td><td>
</td></tr>
<tr><td>BUBBLE / DENT</td><td>BUBBLES WITHIN VIEWING AREA.
AVERAGE DIAMETER：D (mm)
<table>
<tr><th>SIZE D</th><th>PERMISSIBLE NO.</th></tr>
<tr><td>W≤0.2mm</td><td>IGNORE</td></tr>
<tr><td>0.2mm<W≤0.3mm</td><td>3</td></tr>
<tr><td>0.3mm<W≤0.5mm</td><td>1</td></tr>
<tr><td>W>0.5mm</td><td>0</td></tr>
</table></td><td>
</td></tr>
<tr><td>CRACK</td><td>
<table>
<tr><td>CORNER</td><td>X +Y ≤ 4mm 、Z ≤ t
(t：THICKNESS)</td></tr>
<tr><td>EDGE</td><td>X≤6 mm、Y≤ 1mm、Z ≤t mm
(t：THICKNESS)</td></tr>
</table></td><td>
</td></tr>
</table>

NOTE:

1. FOR ANY SPOTS OR LINES, WHICH ARE NOT OBSERVED UNDER APPROPRIATE PANEL OPERATING CONDITION ARE DEEMED ACCEPTABLE.
2. THE FOREIGN MATERIALS THAT CAN BE BLOWN OUT BY AIR AND REMOVED BY WET CLEANING ARE NOT REGARDED AS DEFECTS.

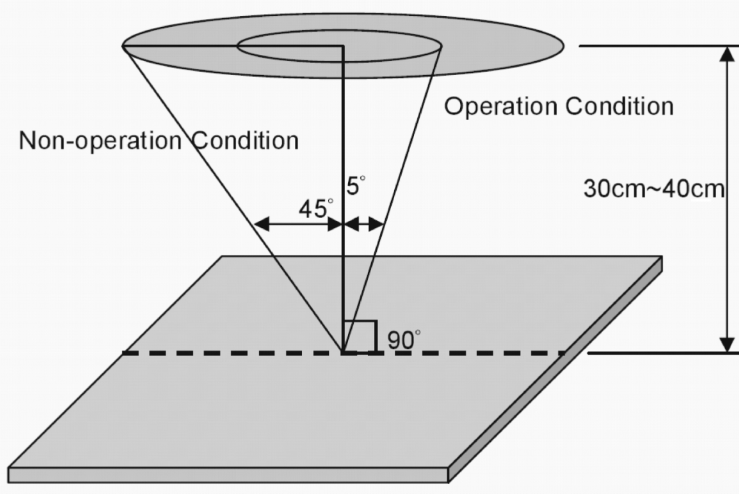
1 3 . INSPECTION CRITERION

13.1 APPLICATION

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

13.2 INSPECTION CONDITIONS

13.2.1 (1)OBSERVATION DISTANCE：35cm±5cm
(2)VIEW ANGLE：
NON-OPERATION CONDITION：±5°
(PERPENDICULAR TO LCD PANEL SURFACE)
OPERATION CONDITION：±45°
(PERPENDICULAR TO LCD PANEL SURFACE)



13.2.2 ENVIRONMENT CONDITIONS：

AMBIENT TEMPERATURE		20°C~25°C
AMBIENT HUMIDITY		65±20%RH
AMBIENT ILLUMINATION	COSMETIC INSPECTION	MORE THAN 600Lux
	FUNCTIONAL INSPECTION	300~500 Lux

13.2.3 INSPECTION LOT
QUANTITY PER DELIVERY LOT FOR EACH MODEL

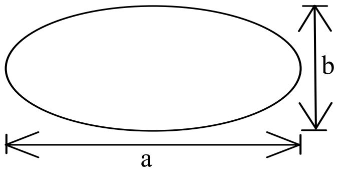
13.2.4 INSPECTION METHOD
A SAMPLING INSPECTION SHALL BE MADE ACCORDING TO THE FOLLOWING PROVISIONS TO JUDGE THE ACCEPTABILITY
(A)APPLICABLE STANDARD：MIL-STD-105E
NORMAL INSPECTION, SINGLE SAMPLING
LEVEL Ⅱ
(B)AQL : MAJOR DEFECT：AQL 0.65
MINOR DEFECT：AQL 1.0

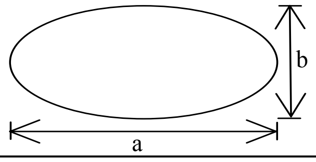
13.3 INSPECTION STANDARDS

13.3.1 VISUAL DEFECTS CLASSIFICATION

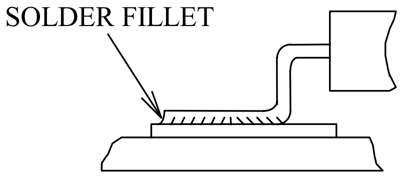
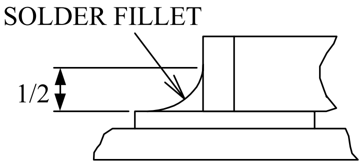
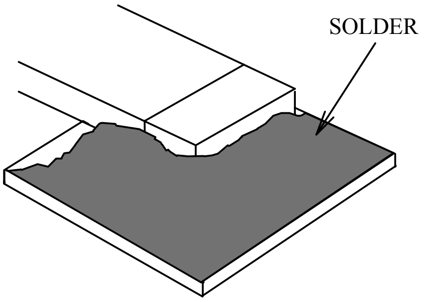
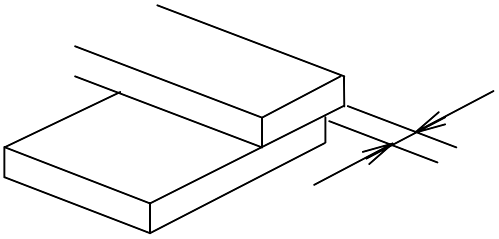
TYPE OF DEFECT	INSPECTION ITEM	DEFECT FEATURE	AQL
MAJOR DEFECT	1.DISPLAY ON	• DEFECT TO MISS SPECIFIED DISPLAY FUNCTION, FOR ALL AND SPECIFIED DOTS EX: DISCONNECTION, SHORT CIRCUIT ETC	0.65
	2.BACKLIGHT	• NO LIGHT • FLICKERING AND OTHER ABNORMAL ILLUMINATION	
	3.DIMENSIONS	• SUBJECT TO INDIVIDUAL ACCEPTANCE SPECIFICATIONS	
MINOR DEFECT	1.DISPLAY ZONE	• BLACK/WHITE SPOT • BUBBLES ON POLARIZER • NEWTON RING • BLACK/WHITE LINE • SCRATCH • CONTAMINATION • LEVER COLOR SPREED	1.0
	2.BEZEL PCB/FPC 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	

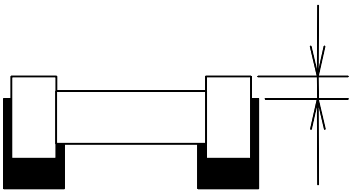
13.3.2 MODULE DEFECTS CLASSIFICATION

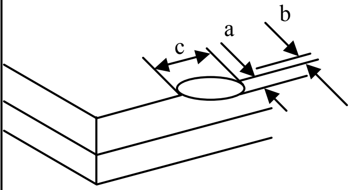
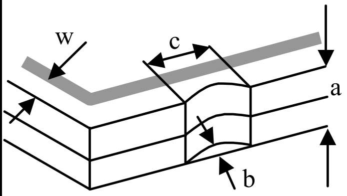
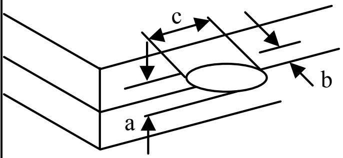
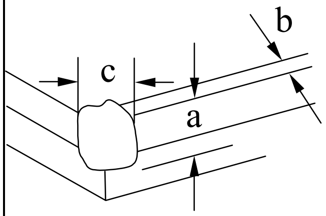
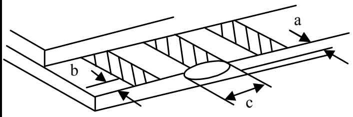
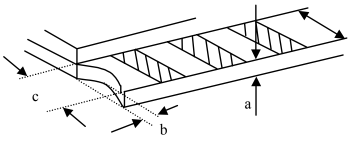
<table>
<tr><th>NO.</th><th>ITEM</th><th>CRITERIA</th></tr>
<tr><td>1.</td><td>DISPLAY ON INSPECTION</td><td>(1)INCORRECT PATTERN
(2)MISSING SEGMENT
(3)DIM SEGMENT
(4)OPERATING VOLTAGE BEYOND SPEC</td></tr>
<tr><td>2.</td><td>OVERALL DIMENSIONS</td><td>(1)OVERALL DIMENSION BEYOND SPEC</td></tr>
<tr><td>3.</td><td>DOT DEFECT</td><td>(1) INSPECTION PATTERN: FULL WHITE, FULL BLACK, RED, GREEN AND BLUE SCREENS.
(2)
<table>
<tr><th>ITEMS</th><th>ACCEPTABLE COUNT</th></tr>
<tr><td>BRIGHT DOT</td><td>$N \le 2$</td></tr>
<tr><td>DARK DOT</td><td>$N \le 3$</td></tr>
<tr><td>TOAL BRIGHT AND DARK DOTS</td><td>$N \le 4$</td></tr>
</table>
NOTE：
1. THE DEFINITION OF DOT：
THE SIZE OF A DEFECTIVE DOT OVER 1/2 OF WHOLE DOT IS REGARDED AS ONE DEFECTIVE DOT.
2. BRIGHT DOT：
DOTS APPEAR BRIGHT AND UNCHANGED IN SIZE IN WHICH LCD PANEL IS DISPLAYING UNDER BLACK PATTERN.
3. DARK DOT：
DOTS APPEAR DARK AND UNCHANGED IN SIZE IN WHICH LCD PANEL IS DISPLAYING UNDER PURE RED, GREEN, BLUE PICTURE.</td></tr>
<tr><td>4.</td><td>FOREIGN BLACK/WHITE/ BRIGHT LINE/ SCRATCH OF VIEWING AREA</td><td>
<table>
<tr><th>LENGTH：L</th><th>WIDTH：W</th><th>PERMISSIBLE NO.</th></tr>
<tr><td>$L \le 0.3$</td><td>$W \le 0.05$</td><td>IGNORE</td></tr>
<tr><td>$0.3 < L \le 2.5$</td><td>$0.05 < W \le 0.1$</td><td>4</td></tr>
<tr><td>$2.5 < L$</td><td>$0.1 < W$</td><td>NONE</td></tr>
</table>
WIDTH：W mm, LENGH： L mm</td></tr>
<tr><td>5.</td><td>FOREIGN MATTER \ BLACK SPOTS \ WHITE SPOTS \ DENT (INCLUDING LIGHT LEAKAGE DUE TO POLARIZING PLATES PINHOLES, ETC.)</td><td>
<table>
<tr><th>AVERAGE DIAMETER (mm): D</th><th>NUMBER OF PIECES PERMITTED</th></tr>
<tr><td>$D \le 0.15$</td><td>IGNORE</td></tr>
<tr><td>$0.15 < D \le 0.5$</td><td>4</td></tr>
<tr><td>$0.5 < D$</td><td>NONE</td></tr>
</table>
NOTE ：DIAMETER $D=(a+b)/2$
 </td></tr>
</table>

<table>
<tr><th>NO.</th><th>ITEM</th><th>CRITERIA</th></tr>
<tr><td>6.</td><td>BUBBLES OF POLARIZER /DIRT/CF FAIL /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 ≤ 0.25</td><td>IGNORE</td></tr>
<tr><td>0.25 < D ≤ 0.5</td><td>N ≤ 5</td></tr>
<tr><td>0.5 < D</td><td>NOTE</td></tr>
<tr><td rowspan="2">SURFACE STATUS</td><td>D < 0.1 mm</td><td>IGNORE</td></tr>
<tr><td>0.1 < D ≤ 0.3mm</td><td>N ≤ 3</td></tr>
<tr><td rowspan="2">CF FAIL / SPOT</td><td>D < 0.1 mm</td><td>IGNORE</td></tr>
<tr><td>0.1 < D ≤ 0.3mm</td><td>N ≤ 3</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


</td></tr>
<tr><td>7.</td><td>LINE DEFECT ON DISPLAY</td><td>OBVIOUS VERTICAL OR HORIZONTAL LINE DEFECT IS NOT ALLOW</td></tr>
<tr><td>8.</td><td>MURA ON DISPLAY</td><td>IT’S OK IF MURA IS SLIGHT VISIBLE THROUNG 6% ND FILTER</td></tr>
<tr><td>9.</td><td>UNEVEN COLOR SPREAD, COLORATION</td><td>(1)TO BE DETERMINED BASED UPON THE STANDARD SAMPLE.</td></tr>
<tr><td>10.</td><td>BEZEL APPEARANCE</td><td>(1)BEZEL MAY NOT HAVE RUST, BE DEFORMED OR HAVE FINGER PRINTS STAINS OF OTHER CONTAMINATION.
(2)BEZEL MUST COMPLY WITH JOB SPECIFICATIONS.</td></tr>
<tr><td>11</td><td>PCB / FPC</td><td>(1)THERE MAY NOT BE MORE THAN 2mm OF SEALANT OUTSIDE THE SEAL AREA ON THE PCB/FPC, AND THERE SHOULD BE NO MORE THAN THREE PLACES.
(2)NO OXIDATION OR CONTAMINATION PCB TERMINALS.
(3)PARTS ON PCB/FPC 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/FPC 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.</td></tr>
</table>

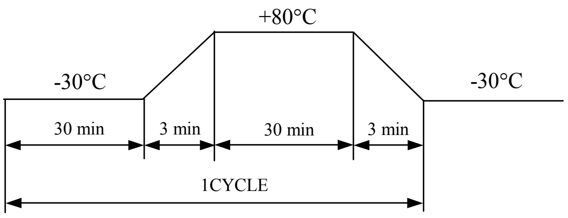
NO.	ITEM	CRITERIA
12.	SOLDERING	(1)NO SOLDERING FOUND ON THE SPECIFIED PLACE (2)INSUFFICENT SOLDER (a)LSI, IC A POOR WETTING OF SOLDER IS BETWEEN LOWER BEND OR "HEEL" OF LEAD AND PAD  (b)CHIP COMPONENT · SOLDER IS LESS THAN 50% OF SIDES AND FRONT FACE WETTING  - SOLDER WETS 3 SIDES OF TERMINAL, BUT LESS THAN 25% OF SIDES AND FRONT SURFACE AREA ARE COVERED  (3)PARTS ALIGMENT (a)LSI, IC LEAD WIDTH IS MORE THAN 50% BEYOND PAD OUTLINE 

NO.	ITEM	CRITERIA
12.	SOLDERING	(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.
13.	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.
14.	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.

<table>
<tr><th>NO.</th><th>ITEM</th><th colspan="2">CRITERIA</th></tr>
<tr><td rowspan="5">15.</td><td rowspan="5">CRACKED GLASS</td><td colspan="2">THE LCD WITH EXTENSIVE CRACK IS NOT ACCEPTABLE</td></tr>
<tr><td>GENERAL GLASS CHIP：


 </td><td><table><tr><th>a</th><th>b</th><th>c</th></tr><tr><td>≤ t/2</td><td>< VIEWING AREA</td><td>≤ 1/8X</td></tr><tr><td>t/2 > , ≤ 2t</td><td>≤ W/2</td><td>≤ 1/8X</td></tr></table>
*W=DISTANCE BETWEEN SEALANT AREA AND LCD PANEL EDGE
X = LCD SIDE LENGTH
t = GLASS THICKNESS</td></tr>
<tr><td>CORNER PART：
 </td><td><table><tr><th>a</th><th>b</th><th>c</th></tr><tr><td>≤ t/2</td><td>< VIEWING AREA</td><td>≤ 1/8X</td></tr><tr><td>> t/2 , ≤ 2t</td><td>≤ W/2</td><td>≤ 1/8X</td></tr></table>
*W=DISTANCE BETWEEN SEALANT AREA AND LCD PANEL EDGE
X = LCD SIDE LENGTH
t = GLASS THICKNESS</td></tr>
<tr><td>CHIP ON ELECTRODE PAD
 </td><td><table><tr><th>a</th><th>b</th><th>c</th></tr><tr><td>≤ t</td><td>≤ 0.5mm</td><td>≤ 1/8X</td></tr></table>
* X=LCD SIDE WIDTH
t =GLASS THICKNESS</td></tr>
<tr><td> </td><td><table><tr><th>a</th><th>b</th><th>c</th></tr><tr><td>≤ t</td><td>≤ 1/8X</td><td>≤ L</td></tr></table>
*X=LCD SIDE WIDTH
t = GLASS THICKNESS
L=ELECTRODE PAD LENGTH
①IF GLASS CHIPPING THE ITO TERMINAL, OVER 2/3 OF THE ITO MUST REMAIN AND BE, INSPECTED ACCORDING TO ELECTRODE TERMINAL SPECIFICATIONS
②IF THE PRODUCT WILL BE HEAT SEALED BY THE CUSTOMER, THE ALIGNMENT MARK MUST NOT BE DEMAGED</td></tr>
</table>

13.4 RELIABILITY TEST

13.4.1 STANDARD SPECIFICATIONS FOR RELIABILITY OF LCD MODULE

NO	ITEM	DESCRIPTION
1	HIGH TEMPERATURE OPERATION	THE SAMPLE SHOULD BE ALLOWED TO STAND AT +70°C FOR 240 HRS
2	LOW TEMPERATURE OPERATION	THE SAMPLE SHOULD BE ALLOWED TO STAND AT –20°C FOR 240 HRS
3	HIGH TEMPERATURE STORAGE	THE SAMPLE SHOULD BE ALLOWED TO STAND AT +80°C FOR 240 HRS
4	LOW TEMPERATURE STORAGE	THE SAMPLE SHOULD BE ALLOWED TO STAND AT –30°C FOR 240 HRS
5	HIGH TEMP / HUMIDITY TEST STORAGE	THE SAMPLE SHOULD BE ALLOWED TO STAND AT 60°C, 90% RH 240 HRS
6	THERMAL SHOCK (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.

13.5 TESTING CONDITIONS AND INSPECTION CRITERIA

FOR THE FINAL TEST THE TESTING SAMPLE MUST BE STORED AT ROOM TEMPERATURE FOR 24 HOURS, AFTER THE TESTS LISTED IN TABLE 13.5, STANDARD SPECIFICATIONS FOR RELIABILITY HAVE BEEN EXECUTED IN ORDER TO ENSURE STABILITY.

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

13.6 OPERATION

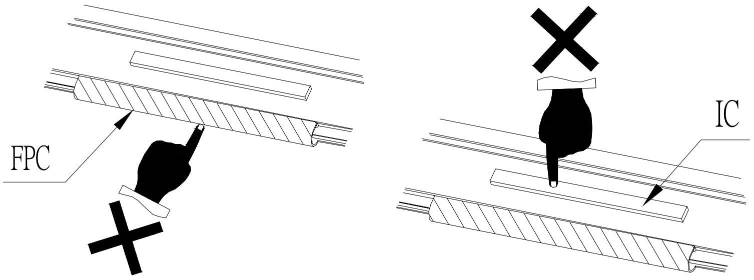
13.6.1 DO NOT CONNECT OR DISCONNECT MODULES TO OR FROM THE MAIN SYSTEM WHILE POWER IS BEING SUPPLIED .

13.6.2 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 .

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

13.6.4 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 .

13.6.5 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!



13.7 NOTICE

13.7.1 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 .

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

13.7.3 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 .

13.7.4 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 .

13.7.5 DON’T GIVE EXTERNAL SHOCK.

13.7.6 DON’T APPLY EXCESSIVE FORCE ON THE SURFACE.

13.7.7 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.

13.7.8 DON’T OPERATE IT ABOVE THE ABSOLUTE MAXIMUM RATING.

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

13.7.10 STORE WITHOUT ANY PHYSICAL LOAD.

13.7.11 REWIRING: NO MORE THAN 3 TIMES.