浙 江 新 力 光 电 科 技 有 限 公 司

Xinli Optronics Co., Ltd

SPECIFICATION

PRODUCT NO. : **TCXD103ABLON-20**
VERSION : **Ver 1.3**
ISSUED DATE : **2021-5-7**

This module uses ROHS2.0 material

FOR CUSTOMER： _____

■：**APPROVAL FOR SPECIFICATION**
□：**APPROVAL FOR SAMPLE**

DATE	APPROVED BY

Xinli Optoelectronics ：

Presented by	Reviewed by	Organized by

1. Revision Recode

Revision	Description	Date
1.0	Initial Release	2021/2/6
1.1	Change Power on/off Timing Sequence	2021/2/19
1.2	Change Outline Dimension and Optical Parameter	2021/3/6
1.3	Change LCD and Drawing	2021/5/7

2. General Description and Features

The 10.25 inch Module named TCXD103ABLON-20 is a-Si TFT-LCD module, which is the type of transmissive. It is consisted of TFT-LCD Panel, Driver IC, FPC，PCB and Back-Light unit. Features of this product are listed in the following table.

NO	Item	Contents	Unit
(1)	Module Outsize	260.44*108.7 *6.2	mm
(2)	LCD Active area	243.65 * 91.37	mm
(3)	Dot Number	1920*RGB*720	/
4)	Pixel size	0.1269*0.1269	mm
(5)	LCD type	TFT Transmissive	/
(6)	Display Color	16.7M	/
(7)	Viewing direction	Free(IPS type)	O'clock
(8)	Backlight Type	36-chip LEDs	/
(9)	Power Supply	3.3（TYP)	V
(10)	Interface type	LVDS(VESA)	/
(11)	Module weight	TBD	g
(12)	Surface Treatment	HC	/
(13)	NTSC	70（TYP）	%
(14)	Manufacturing plant	No.4818, Youquan Road, Nanhu District, Jiaxing, Zhejiang	/

3. Mechanical Dimension

NOTES:
1.DISPLAY TYPE: 10.25",TFT-LCD,Normally Black,TRANSMISSIVE
2.All viewing angle
3.OPERATING TEMP: -30°C~85°C;
STORAGE TEMP: -40°C~90°C;
4.BACK LIGHT: 36 Chip-White LEDs,220mA,VL=25.8V (TYP)
LCM LUMINANCE: 1000 cd/m2(TYP) 800 cd/m2 (TYP)
5.KEY DIMENSION:*, REFERENCED DIMENSION:( )
Non marked tolerance is ±0.3, MODIFY MARK:
6.COMPLY WITH RoHS DIRECTIVE

第三视角

10.25 " IPS TFT
1920*RGB*720

BACKLIGHT CIRCUIT

Vf:25.8V typ.
If:554=220mA

TITLE	LCM OUTLINE DIMENSION	
D/N	TCX1031BLON-20	
VER:	A	REV: 2	PAGE 1/1

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Zhejiang Xinli Optoelectronics Technology Co.,Ltd

	PREPARED	CHECK	APPROVED
	DATE	DATE	DATE

MODULE NO.: TCX1031BLON-20
SCALE NTS UNIT mm

REF	DATE	DESCRIPTION
	2021-2-27	
	2021-4-30	更改LCD、更改绑线小0.3mm
	2021-5-6	更改BL、FPC长度

CN2 Pin Assigment	
1	LEDA1
2	LEDA2
3	GND
4	LEDA3
5	NC
6	NTC1
7	NTC2
8	NC
9	LEDK3
10	NC
11	LEDK2
12	LEDK1

CN1 Pin Assigment	
1	GND
2	GND
3	LEDA4
4	VDD
5	VDD
6	VDD
7	GND
8	GND
9	NC
10	NC
11	NC
12	NC
13	GND
14	DD0N
15	DD0P
16	GND
17	DD1N
18	DD1P
19	GND
20	DD2N
21	DD2P
22	GND
23	OCLKN
24	OCLKP
25	GND
26	OD3N
27	OD3P
28	GND
29	OD0P
30	OD0N
31	GND
32	OD1P
33	OD1N
34	GND
35	OD2N
36	OD2P
37	GND
38	ECLKN
39	ECLKP
40	GND
41	OD3P
42	OD3N
43	RESET
44	STBYB
45	SHLR
46	UPDN
47	Fail_T
48	GND
49	NC
50	NC

4.Interface Pin Connection

4.1 CN1

The Connector recommended model is IMSA-11501S-05A-GFN1 .

NO	Symbol	Level	Description
1	GND	P	Ground
2	GND	P	Ground
3	GND	P	Ground
4	VDD	P	Power supply
5	VDD	P	Power supply
6	VDD	P	Power supply
7	VDD	P	Power supply
8	GND	P	Ground
9	NC	-	Not connect
10	NC	-	Not connect
11	NC	-	Not connect
12	GND	P	Ground
13	OLV0N	I	LVDS Odd Data Lane 0 Negative
14	OLV0P	I	LVDS Odd Data Lane 0 Positive
15	GND	P	Ground
16	OLV1N	I	LVDS Odd Data Lane 1 Negative
17	OLV1P	I	LVDS Odd Data Lane 1 Positive
18	GND	P	Ground
19	OLV2N	I	LVDS Odd Data Lane 2 Negative
20	OLV2P	I	LVDS Odd Data Lane 2 Positive
21	GND	P	Ground
22	OLVCLKN	I	LVDS Odd Clock Lane Negative
23	OLVCLKP	I	LVDS Odd Clock Lane Positive
24	GND	P	Ground
25	OLV3N	I	LVDS Odd Data Lane 3 Negative
26	OLV3P	I	LVDS Odd Data Lane 3 Positive
27	GND	P	Ground
28	ELV0N	I	LVDS Even Data Lane 0 Negative
29	ELV0P	I	LVDS Even Data Lane 0 Positive

30	GND	P	Ground
31	ELV1N	I	LVDS Even Data Lane 1 Negative
32	ELV1P	I	LVDS Even Data Lane 1 Positive
33	GND	P	Ground
34	ELV2N	I	LVDS Even Data Lane 2 Negative
35	ELV2P	I	LVDS Even Data Lane 2 Positive
36	GND	P	Ground
37	ELVCLKN	I	LVDS Even Clock Lane Negative
38	ELVCLKP	I	LVDS Even Clock Lane Positive
39	GND	P	Ground
40	ELV3N	I	LVDS Even Data Lane 3 Negative
41	ELV3P	I	LVDS Even Data Lane 3 Positive
42	GND	P	Ground
43	RESET	I	Reset Pin
44	STBYB	I	Standby Pin
45	SHLR	I	Right/Left invert control
46	UPDN	I	Top/Bottom invert control
47	Fail_T	O	Output for fail detection
48	GND	P	Ground
49	NC	-	Not connect
50	NC	-	Not connect

Note（1）

SHLR	UPDN	Data shifting
VDD	VDD	Left→Right，UP→Down(default)
VDD	GND	Left→Right，Down→UP
GND	VDD	Right→Left，UP→Down
GND	GND	Right→Left，Down→UP

4.2 CN2

The Connector recommended model is IMSA-12001S-12Y903 .

NO	Symbol	Level	Description
1	A1	P	LED anode1 power supply
2	A2	P	LED anode2 power supply
3	A3	P	LED anode3 power supply
4	A4	P	LED anode4 power supply
5	NC	-	Not connect
6	NTC1	C	heat sensor
7	NTC2	C	heat sensor
8	NC	-	Not connect
9	K4	P	LED cathode4 power supply
10	K3	P	LED cathode3 power supply
11	K2	P	LED cathode2 power supply
12	K1	P	LED cathode1 power supply

5. Maximum Rating

Item	Symbol	Rating	Unit
Operating temperature	Top	-30 to 85	℃
Storage temperature	Tst	-40 to 90	℃
Power supply	VDD	-0.3V ~ 4.7	V

6.Electrical Characteristics

6.1 Description Dieplay Electronics

The display module comes with an 8 bits LVDS interface. The display's data and control signals (RESET, STBYB …) , which generates all necessary control signals for the source driver and gate driver. Single VDD voltage inputs are required for display functional operation. Gamma setting adjustment is done by Innolux with default value.

6.2 Typical Operation Conditions

Ta=25℃

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Power supply		VDD	-	3.0	3.3	3.6	V
Logic input signal Voltage	H level	V_{IH1}	-	0.7*VDD	-	VDD	V
	L level	V_{IL1}		GND	-	0.3*VDD	V

6.3 ON/OFF Sequence
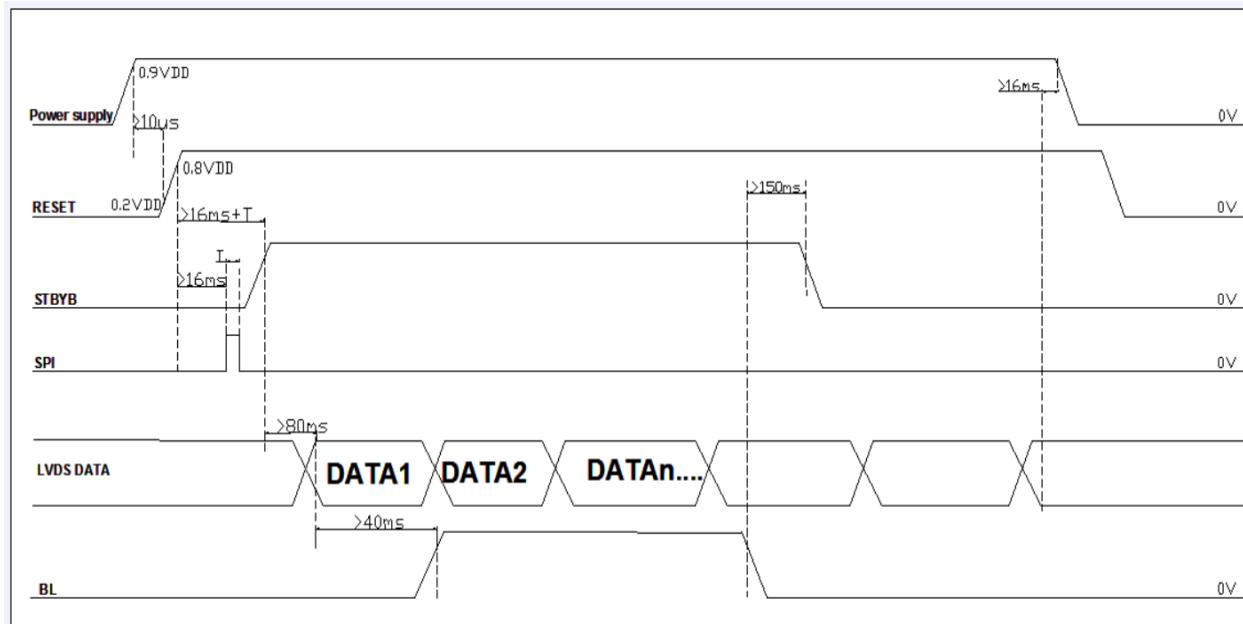
6.4 Timing Characteristics
6.4.1 LVDS interface

(Ta = -40°C to +105°C , VDD = 2.8V to 3.6V, VDDI = 2.8V to 3.6V, VSS = 0V, unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Comment
Input Threshold H Level	V_{TH}	-	-	150	mV	$0.3V \leq V_{CM} \leq 1.0V$
		-	-	100	mV	$1.0V \leq V_{CM} \leq 1.5V$
Input Threshold L Level	V_{TL}	-150	-	-	mV	$0.3V \leq V_{CM} \leq 1.0V$
		-100	-	-	mV	$1.0V \leq V_{CM} \leq 1.5V$
Input Differential Voltage	V_{ID}	150	350	800	mV	$0.3V \leq V_{CM} \leq 1.0V$
		100	350	800	mV	$1.0V \leq V_{CM} \leq 1.5V$
Input Common Voltage	V_{CM}	0.3	1.2	1.5	V	For the case when internal termination resistor is used
		0.3	1.2	1.8	V	For the case when external termination resistor is used.
Terminal Resistor	Z_{ID}	70	100	130	Ω	$0.3V \leq V_{CM} \leq 1.5V$
		75	100	125	Ω	$0.3V \leq V_{CM} \leq 1.4V$
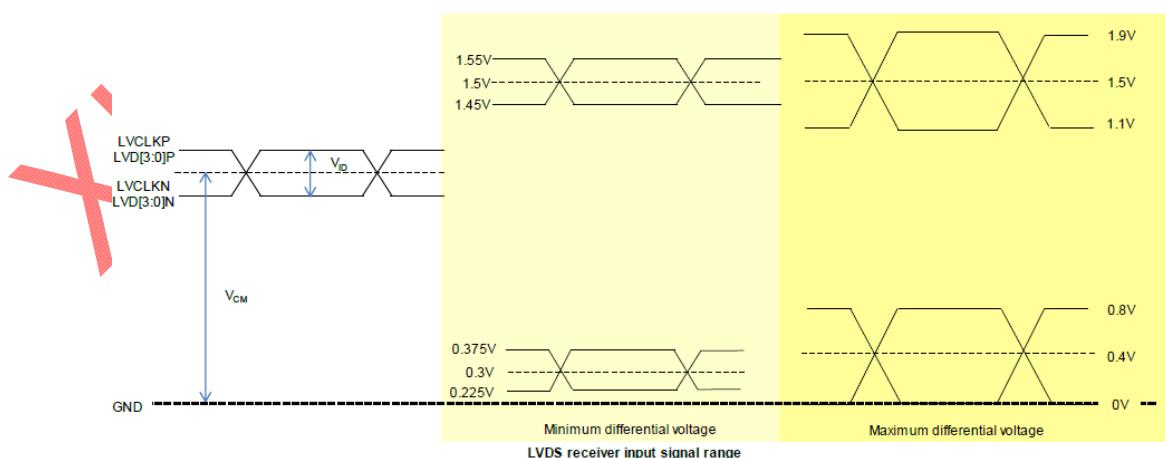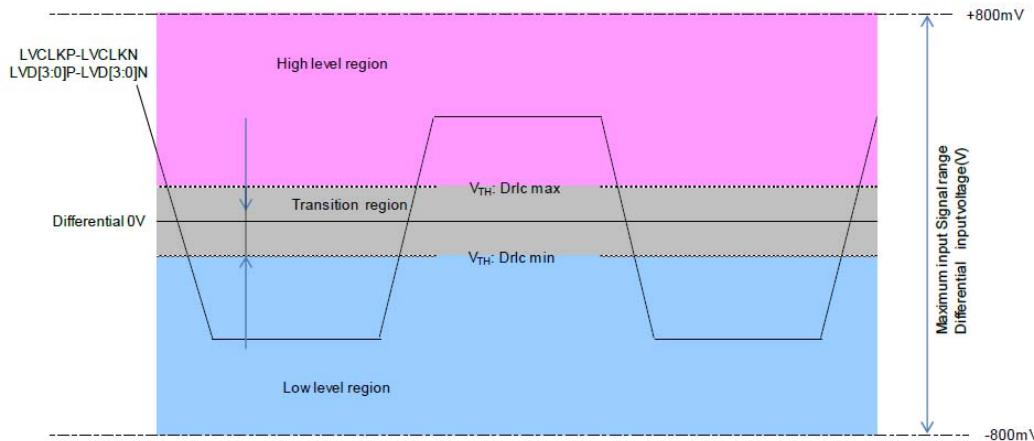
6.4.2 Timing

(Ta = -40°C to +105°C, VDD, VDDI = 2.8V to 3.6V, VSS = 0V, unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Vertical Period	VP		VBP + Vdisp + VFP			HSYNC
Vertical Sync Width	VS		1	-	VBP-1	HSYNC
Vertical Front Porch	VFP	VDISP = 8n+0	3	-	1023	HSYNC
		Other Settings	5	-	1023	HSYNC
Vertical Back Porch	VBP		3	-	1023	HSYNC
Vertical Active Area	Vdisp		80	-	2880	HSYNC
Horizontal Period	HP		HBP + Hdisp + HFP			CLK
Horizontal Sync Width	HS		1	-	HBP-1	CLK
Horizontal Front Porch	HFP		16	-	1023	CLK
Horizontal Back Porch (Note)	HBP	LVDS : Single Link	28	-	1023	CLK
		LVDS : Dual Link	14	-	1023	CLK
		RGB-I/F	28	-	1023	CLK
Horizontal Active Area	Hdisp		240	-	2880	CLK
Difference between VSYNC and HSYNC	VH		0	-	HP-1	CLK

(Note) For the case of short pulse filtering function enabled, the minimum value must be added to short pulse filter setting.

6.4.3 Data Input Format

2-port LVDS signals, VESA format, 8-bit mode
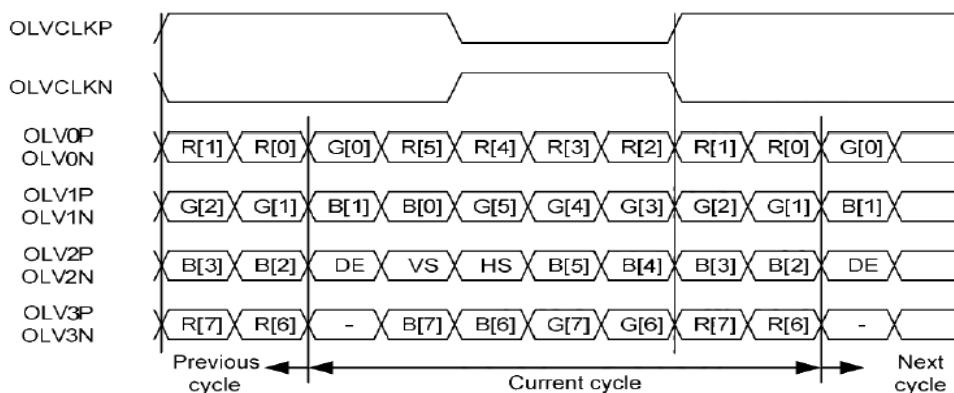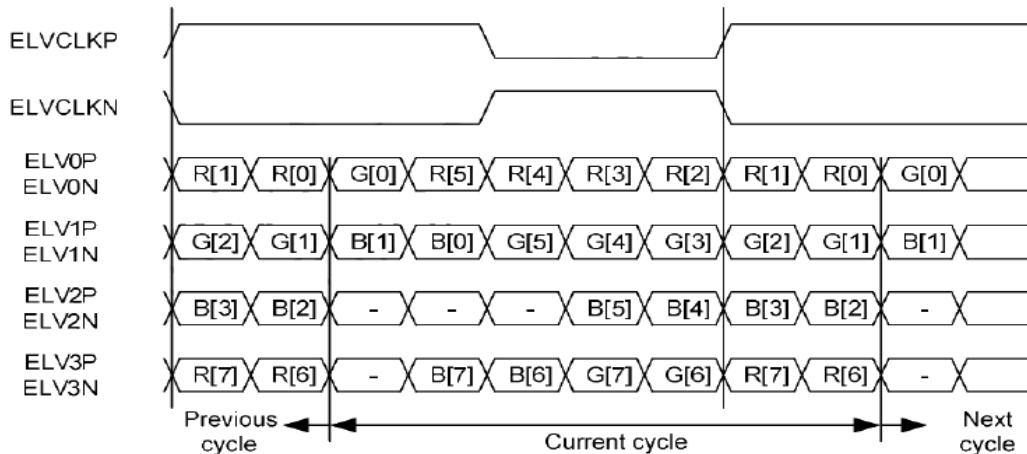
7.Backlight Characteristics

Item	syb	Min	Typ	Max	Unit	Condition
Voltage	Vf	23.6	25.8	29.7	V	Note1
Current	If	-	220	240	mA	
Number of LED	-		36		pcs	-
Life	-	20000	-	-	hrs	Note2

Note 1: The LED Supply Voltage is defined by the number of LED at Ta=25℃ and IF =220 mA.

Note 2: The "LED life time" is defined as the module brightness decrease to 50% original brightness at Ta=25℃ and IL =220 mA. The LED lifetime could be decreased if operating IL is larger than 220mA.

8. Electro-Optical Characteristics

Item		Symbol	Condition	Min	Typ	Max	Unit	Note
Response time		Tr+Tf	Ta=25℃	-	20	30	ms	**4**
			Ta=−20℃	-	200	250	ms	
			Ta=−30℃	-	400	500	ms	
Uniformity （Five point）		δ WHITE	θ=0° ∅=0° Ta=25℃	75	80	-	%	**7**
Contrast ratio		Cr		800	1300	-	-	**3 ,5**
Surface Luminance		Lv		800	1000	-	-	**3 ,7**
NTSC				-	70	-	**%**	**3,7**
Viewing angle range	Horizontal	x+	CR > 10	70	80	-	deg	**6**
		x-		70	80	-	deg	
	Vertical	y+		70	80	-	deg	
		y-		70	80	-	deg	
Color filter chromaticity (x, y)	White	X	θ = φ = 0°	TBD	TBD	TBD	-	**7**
		Y		TBD	TBD	TBD		
	Red	X	θ = φ = 0°	TBD	TBD	TBD		
		Y		TBD	TBD	TBD		
	Green	X	θ = φ = 0°	TBD	TBD	TBD		
		Y		TBD	TBD	TBD		
	Blue	X	θ = φ = 0°	TBD	TBD	TBD		
		Y		TBD	TBD	TBD		

Note 1: Ambient temperature=25℃±2℃

Note 2: To be measured in the dark room with backlight unit.

Note 3: To be measured at the center area of panel with a viewing cone of 1 by Topcon luminance meter BM-7A, after 10 minutes operation (module).
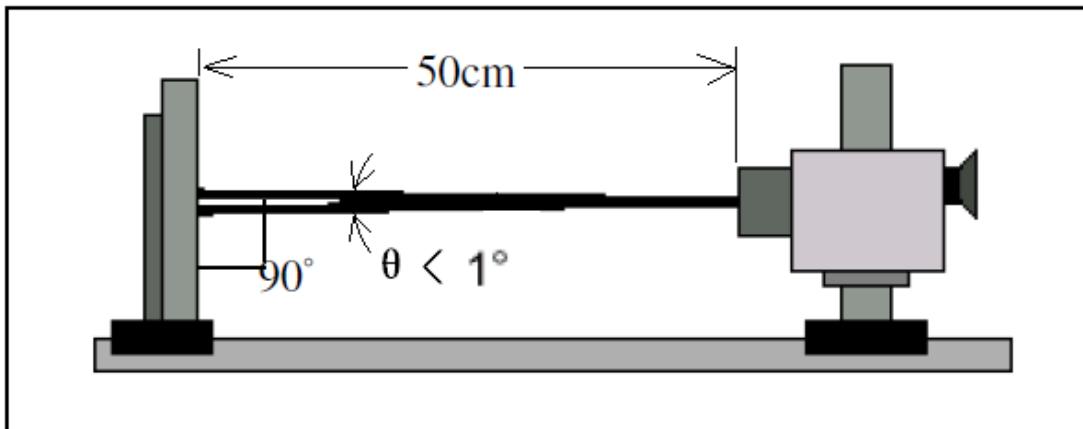
Note 4: Definition of response time:

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

Refer to figure as below.
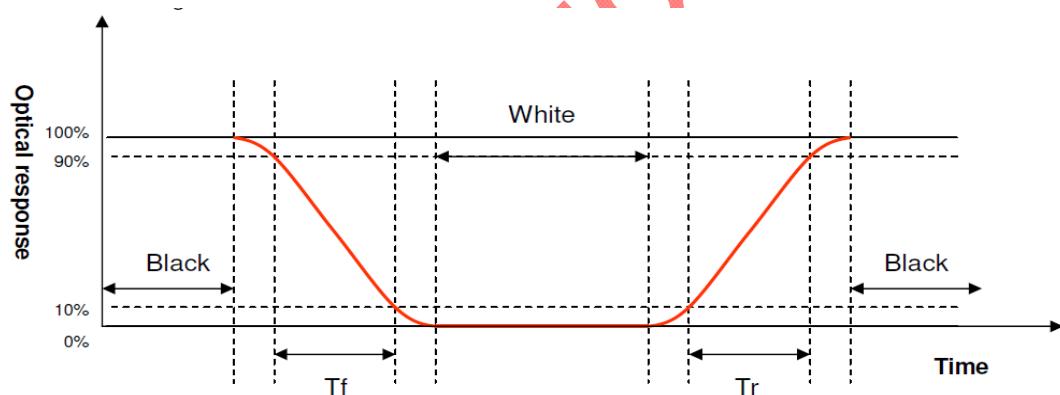
Note 5. Definition of contrast ratio:

Contrast ratio is calculated with the following formula:

$$\text{Contrast ratio (CR)} = \frac{\text{Photo detector output when LCD is at "White" state}}{\text{Photo detector output when LCD is at "Black" state}}$$

Note 6. Definition of viewing angle

Viewing angle is the angle at which the contrast ratio is greater than 10 for TFT module. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface.

Normal:

$\theta = 0°$ **12 O'clock**

$\psi = 180$

$\psi = 270$ **9 O'clock**

$\psi = 90$ **3 O'clock**

$\psi = 0$

6 O'clock
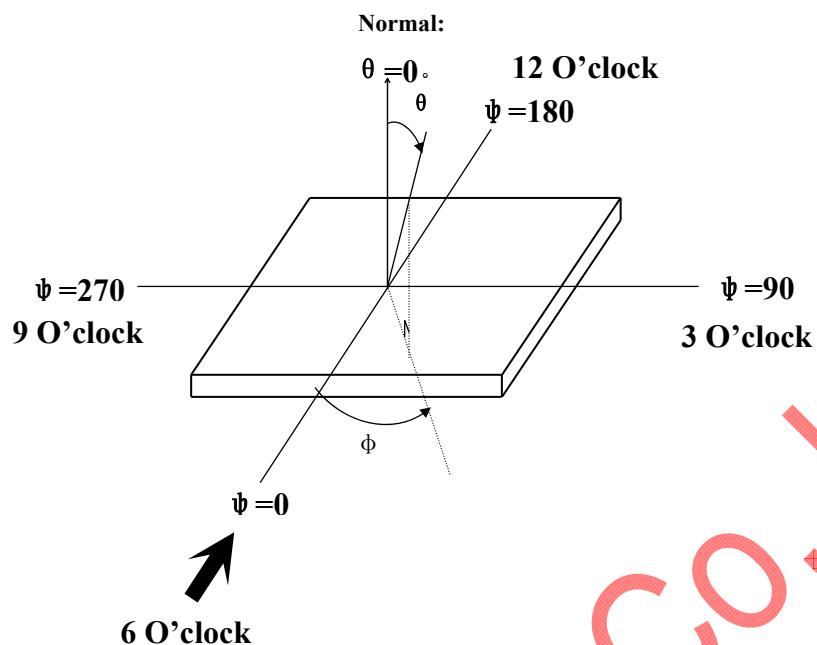
Note 7. Surface luminance is the LCD surface from the surface with all pixels displaying white. Refer to figure as below.

Measuring method for Contrast ratio, surface luminance, Luminance uniformity，CIE (x, y) chromaticity

H

A   A

B

V

P1   P2

P5

B
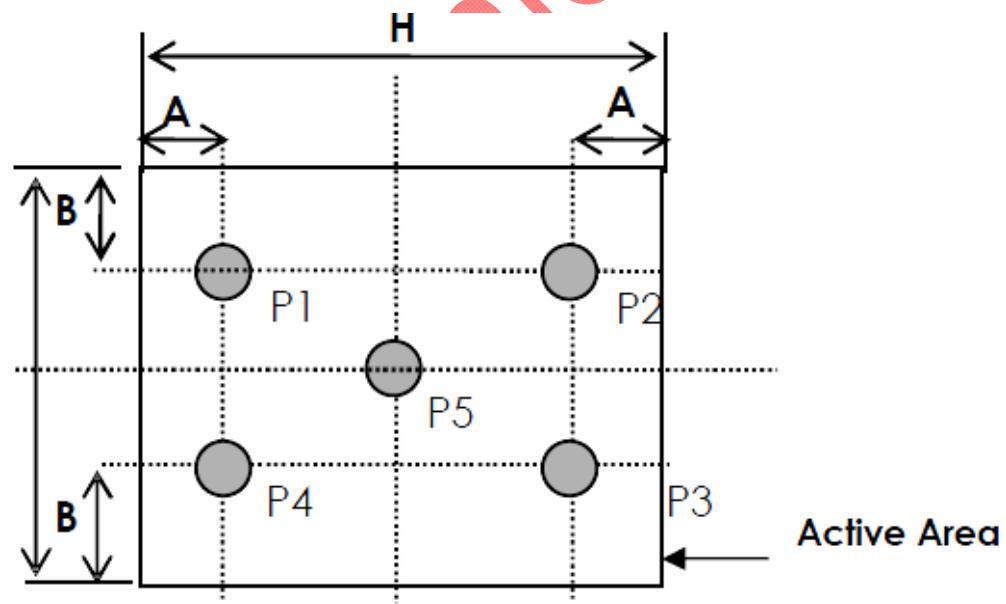
P4   P3   Active Area

A : 5 mm   B : 5 mm   H,V : Active Area

Light spot size Æ=7mm, 500mm distance from the LCD surface to detector lens

measurement instrument is TOPCON's luminance meter BM-7A

Uniformity definition= [min of 5point/max of 5points]x100%

Lv = Average Surface Luminance with all white pixels (P$_5$)

9．Reliability Test

This standard reliability test is done only for the first lot of MP products. Customer and supplier must hold a discussion if other reliability test is requested by customer.

NO.	Test Item	Test Condition	Remarks
1	High temperature storage	90℃,500 H	Note1 IEC60068-2-1:2007,GB2423.2-2008
2	Low temperature storage	-40℃，500 H	IEC60068-2-1:2007 GB2423.1-2008
3	High temperature operation	85℃，500 H	IEC60068-2-1:2007 GB2423.2-2008
4	Low temperature operation	-30℃，500 H	IEC60068-2-1:2007 GB2423.1-2008
5	High temperature /humidity storage	60℃,90% RH, 500H	Note2 IEC60068-2-78 :2001 GB/T2423.3—2006
6	Temperature Cycle (Non operation)	-30℃/85℃, 100 cycles	Start with cold temperature, End with high temperature, IEC60068-2-14:1984,GB2423.22-2002

10. Precautions for Operation and Storage

1. Precautions for Operation

(1)Since LCD panel made of glass,in order to prevent from glass broken or color tone change,please do not apply any mechanical shock or impact or excessive force to it when installing the LCD module.

(2)If LCD panel is broken and liquid crystal substance leaks out and contact your skin or clothes,please immediately wash it off by using soap and water.

(3)The polarizer on the LCD surface is soft and easily scratched.Please be careful when handling.

(4)If LCD surface becomes contaminated,please wipe it off gently by using moisten soft cloth with normal hexane,do not use acetone,ketone,ethanol, alcohol or water.If there is saliva or water on the LCD surface,please wipe it off immediate

ly.

(5)When handing LCD module,please be sure that the body and the tools are properly grounded.And do not touch I/F pins with bare hands or contaminate I/F pins.

(6)Do not attempt to disassemble or process the LCD module.

(7)LCD module should be used under recommended operating conditions shown in chapter 6 and 7.

(8)Response time will be extremely slower at lower temperature than at specified temperature and LCD will show different color when at higher temperature.The phenomenon will disappear when returning to specified condition.

(9)Foggy dew,moisture condensation or water droplets deposited on surface and contact terminals will cause polarizer stain or damage,the deteriorated display quality and electrochemical reaction then leads to the shorter life time and permanent damage to the module probably.Please pay attention to the enviro nmental temperature and humidity.

1. Precautions for Storage

(1)Please store LCD module in a dark place,avoid exposure to sunlight,the light of fluorescent lamp or any ultraviolet ray.

(2)Keep the environment temperature at between 10℃and 35 ℃ and at normal humidity.Avoid high temperature,high humidity or temperature below 0℃.

(3)That keeps the LCD modules stored in the container shipped from supplier be fore using them is recommended.

(4)Do not leave any article on the LCD module surface for an extended period of time.

2. Warranty period

Warrants for a period of 12 Months from the shipping date when stored or used under normal condition.

11. Package Specification

TBD