

Osptek Display

TFT LCD SPECIFICATION

Model No:

YDP800B001-V4

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1. Introduction

1.1 Scope of application

This specification applies to the LCD module that is supplied by Shenzhen Osprey Optoelectronics Technology Co., Ltd.

LCD specification: Dots 1024xRGBx768

All material & processing of the LCD module should be Lead Free.

1.2 TFT features:

Structure: TFT PANNEL+IC +FPC1+BL;

IPS Type LCD

1024dot-segment and 768dot-common outputs;

16.7M Color can be selected by software;

White LED back light;

LVDS interface

TFT interface: LVDS

Touch Interface:I2C

1.3 Applications:

The logo for Osptek, featuring a stylized bird or wing graphic in light blue and purple above the word "osptek" in a lowercase, sans-serif font, with a registered trademark symbol (®) to the upper right of the "k".

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2. LCM General specification

ITEM	Standard value	Unit
LCD Type	Normally black	--
Drive element	TFT active matrix	--
Number of pixels	1024*3RGB(H)X768(V)	Dots
Pixel arrangement	RGB stripe	--
Pixel Pitch (W*H)	0.05275(W) × 0.15825(H)	mm
Active area	162.05(W) × 121.54(H)	mm
Viewing direction	ALL O'CLOCK	--
TFT Driver IC		--
TFT interface	LVDS Interface	--
Module Size(W*H*T)	183.00(W) × 141.00(H) × 5.47(D)	mm
Approx. Weight	TBD	g
Touch structure	--	--
Touch Driver IC	--	--
Touch Interface	--	--

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3. Absolute Maximum Rating

Characteristics	Symbol	Min.	Max.	Unit
LCM Operating Temperature	T _{OPR}	-10	+50	°C
LCM Storage Temperature	T _{STG}	-20	+60	°C
TP Operating Temperature & Humidity(20% ~ 85%RH)	T _{OPR}	-10	+50	°C
TP SStorage Temperature & Humidity(20% ~ 85%RH)	T _{STG}	-20	+60	°C
Humidity	RH	--	90	%

4. Electrical Characteristics

4.1 TFT DC Characteristics

Characteristics	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	VDD	3.0	3.3	3.6	V
Supply Voltage	AVDD	9.8	10	10.2	V
Supply Voltage	VGH	18.6	18.9	19.2	V
Supply Voltage	VGL	-8.1	-7.8	-7.5	V
Supply Voltage	VCOM	2.6	3.6	4.6	V
Current Consumption	I _{DD}	--	TBD	--	mA
	I _{DD-SLEEP}	--	TBD	--	uA

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Current for Driver	I _{GH}	-	0.65	1.0	mA	VGH=18.9V
	I _{GL}	-	0.65	1.0	mA	VGL=-7.8V
	I _{CC}	-	35	60	mA	Vcc=3.3V
	I _{AVDD}	-	25	40	mA	AVDD=10.0V

4.2 Back-Light Unit Characeristics

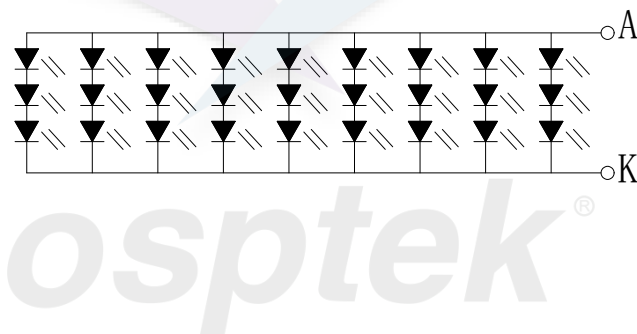
The back-light system is an edge-lighting type with 27 white LEDs. The characteristics of the back-light are shown in the following tables.

Characteristics	Symbol	Min.	Type	Max.	Unit	Notes
Forward Voltage	V_F	8.4	--	9.6	V	--
Forward current	I_F	--	270	--	mA	--
Luminance(With LCD)	L_v	--	450	--	cd/m ²	--
LED life time	N/A	--	20,000	--	Hr	Note 1

Note:

- (1) The “LED life time” is defined as the module brightness decrease to 50% of original brightness at $I_L=20\text{mA/LED}$. The LED life time could be decreased if operating I_L is larger than 25mA/LED.

Backlight circuit diagram shown in below:



5. Module Function Description

TFT Pin Descriptions

Pin No.	Symbol	Description
1	VCOM	Common voltage
2	VDD	Power Voltage for digital circuit.
3	VDD	Power Voltage for digital circuit.
4	NC	NC
5	RESET	RESET PIN
6	STBYB	Standby mode. Normally pulled high STBYB=" 1 " ,normal operation
7	GND	Ground
8	RXIN0-	Negative LVDS Differential Data Input
9	RXIN0+	Positive LVDS Differential Data Input
10	GND	Ground
11	RXIN1-	Negative LVDS Differential Data Input
12	RXIN1+	Positive LVDS Differential Data Input
13	GND	Ground
14	RXIN2-	Negative LVDS Differential Data Input
15	RXIN2+	Positive LVDS Differential Data Input
16	GND	Ground
17	RXCLKIN-	Negative LVDS Differential Clock Input
18	RXCLKIN+	Positive LVDS Differential Clock Input
19	GND	Ground
20	RXIN3-	Negative LVDS Differential Data Input
21	RXIN3+	Positive LVDS Differential Data Input
22	GND	Ground
23-24	NC	NC
25	GND	Ground
26	NC	NC
27	DIMO	NC
28	SELB	high 6 bit / low 8 bit mode select
29	AVDD	Power for Analog Circuit
30	GND	Ground
31-32	LED-	LED Cathode
33	L/R	Horixontal inversion
34	U/D	Vertical inversion
35	VGL	Gate OFF Voltage
36	CABCEN1	NC
37	CABCEN0	NC
38	VGH	Gate ON Voltage
39-40	LED+	LED Anode

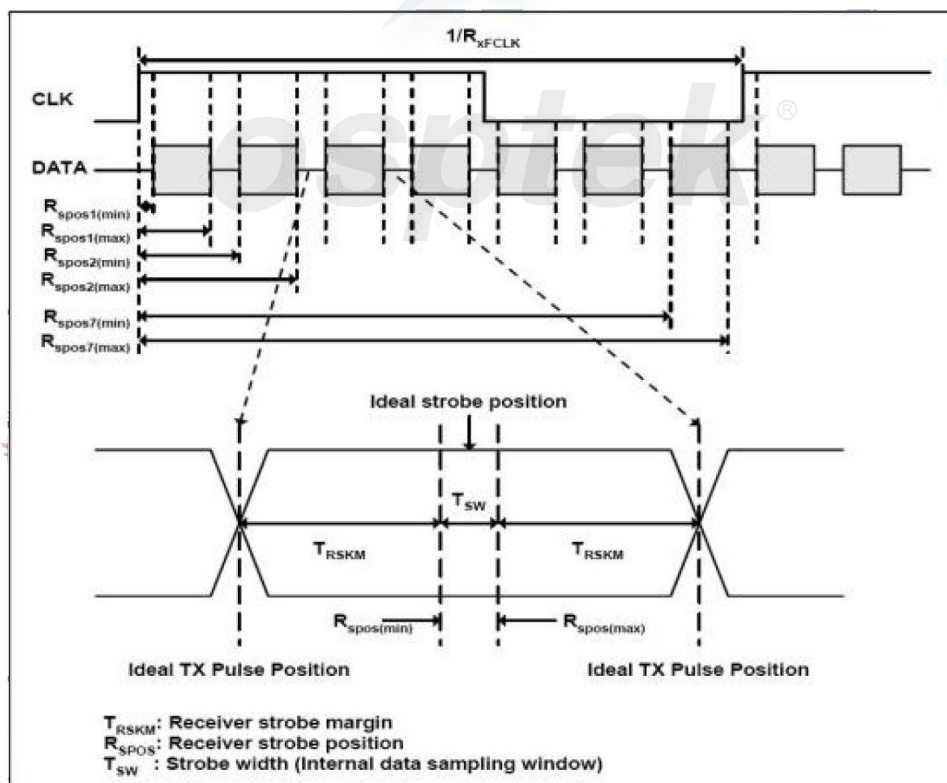
TP Pin Descriptions

NO:	SYMBOL	I/O	FUNCTION
1	SDA	I/O	Touch panel I2C data
2	SCL	I/O	Touch panel I2C clock
3	RST	I/O	Touch panel reset
4	INT	I/O	Touch panel interrupt output
5	VDD3.3	P	Touch panel I/O PWR supply
6	GND	P	Ground

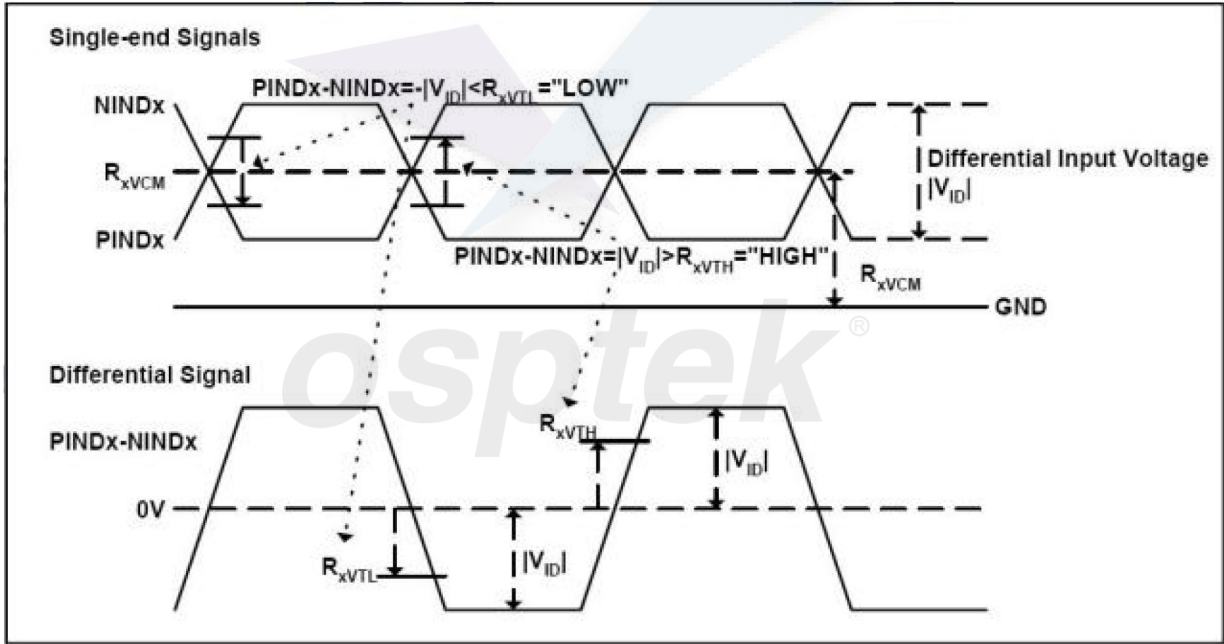
6. Timing Characteristics

Parameter	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Clock frequency	R_{XFCLK}	20	-	71	MHz	
Input data skew margin	T_{RSKM}	500	-	-	ps	
Clock high time	T_{LVCH}	-	$4/(7 * R_{XFCLK})$	-	ns	
Clock low time	T_{LVCL}	-	$3/(7 * R_{XFCLK})$	-	ns	

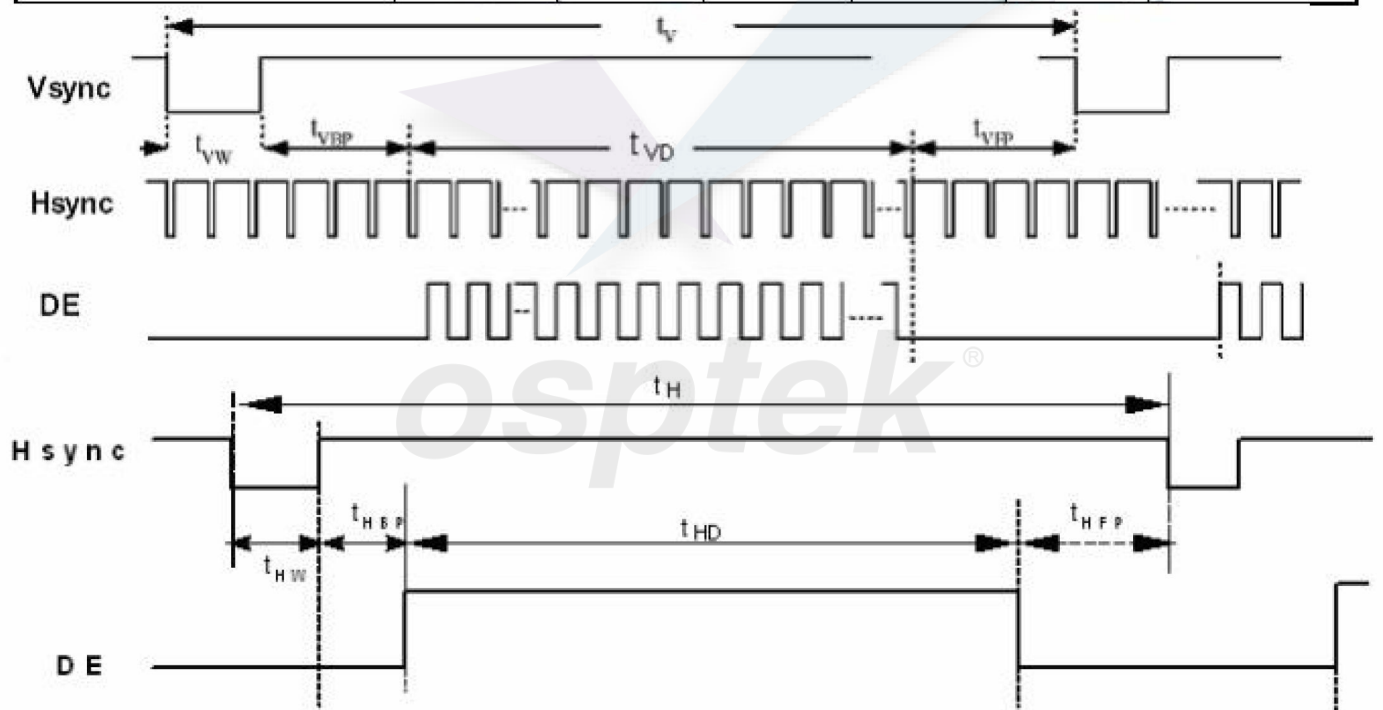
3.3.2. Input Clock and Data Timing Diagram



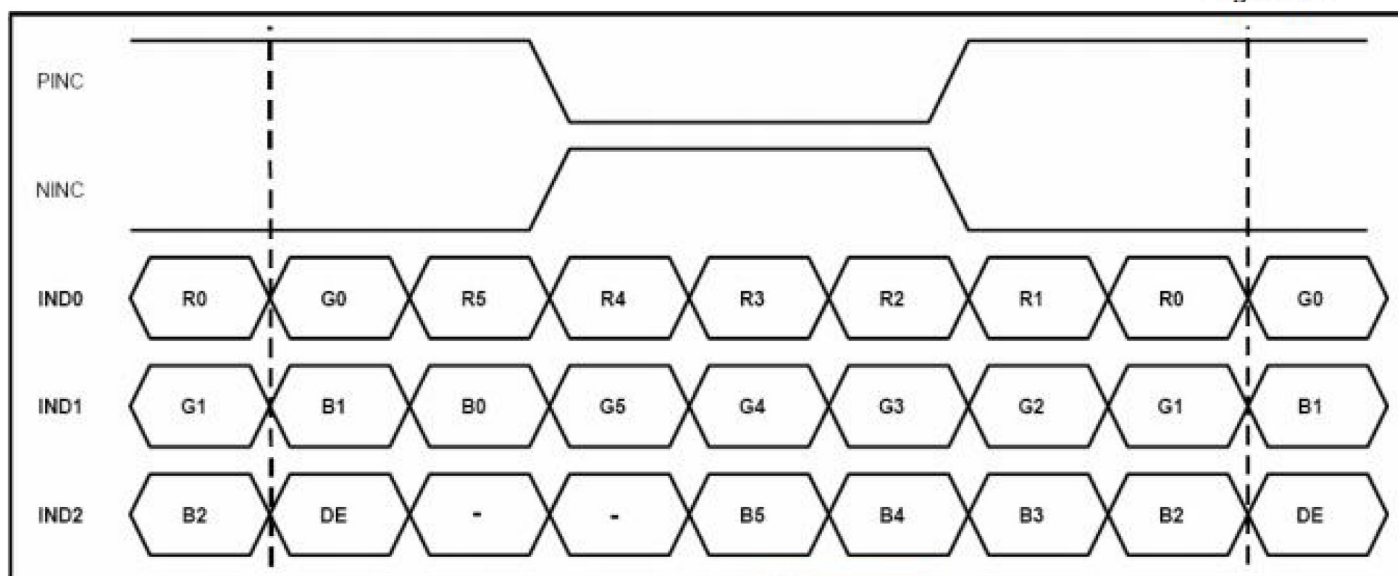
Parameter	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Differential input high Threshold voltage	R_{xVTH}	-	-	+0.1	V	
Differential input low Threshold voltage	R_{xVTL}	-0.1	-	-	V	
Input voltage range (singled-end)	R_{xVIN}	0	-	2.4	V	
Differential input common mode voltage	R_{xVCM}	$ V_{ID} /2$	-	$2.4- V_{ID} /2$	V	
Differential voltage	$ V_{ID} $	0.2	-	0.6	V	
Differential input leakage current	RV_{xIIZ}	-10	-	+10	uA	



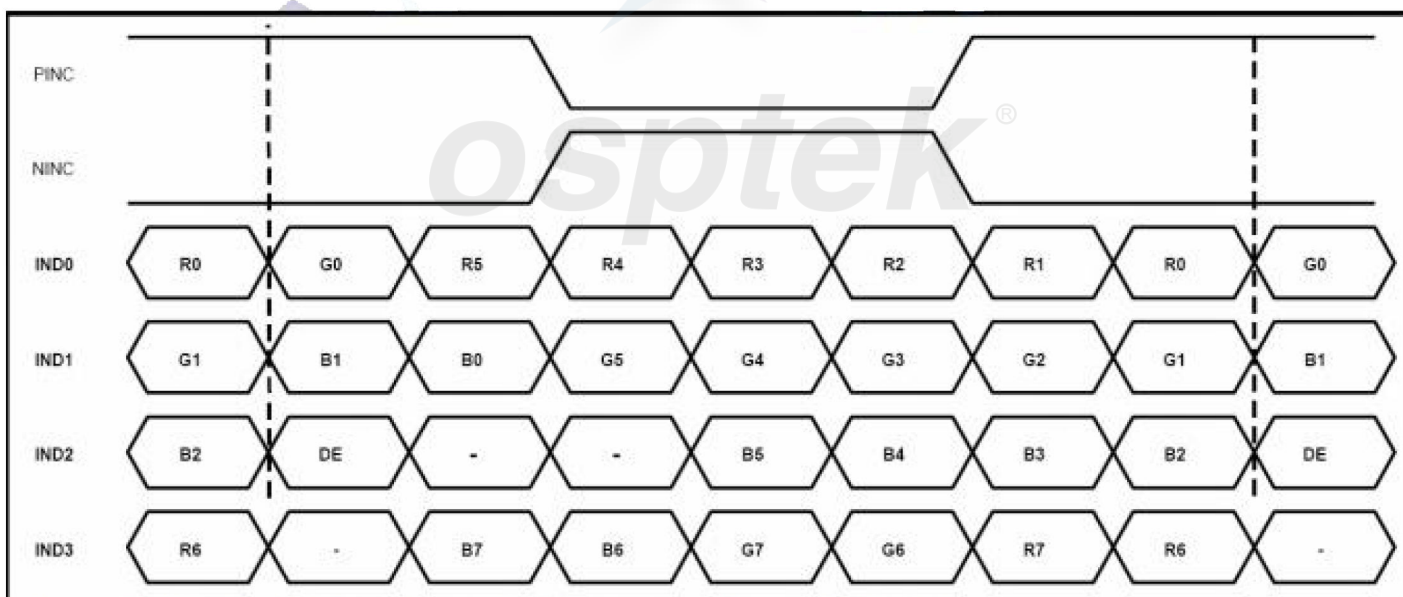
Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Clock Frequency	fclk	52	65	71	MHz	Frame rate =TBD
Horizontal display area	thd	1024				
HS period time	th	1114	1344	1400	DCLK	
HS Blanking	thb+thfp	90	320	376	DCLK	
Vertical display area	tvd	768				
VS period time	tv	778	806	845	H	
VS Blanking	tvb+tvfp	10	38	77	H	



3.3.5. Data Input Format



8bit LVDS input



Note: Support DE timing mode only, SYNC mode not supported.

7.Optical Characteristics

Items		Symbol	Condition	Specifications			Unit
				Min.	Typ.	Max.	
Contrast Ratio		CR		-	800	-	-
Response Time		T _R + T _F		-	25	50	ms
				-	-	-	ms
Chromaticity	Red	X _R			/		-
		Y _R			/		-
	Green	X _G			/		-
		Y _G			/		-
	Blue	X _B			/		-
		Y _B			/		-
	White	X _W		0.28	0.31	0.34	-
		Y _W		0.29	0.32	0.35	-
Viewing angle	Hor.	φ1(3 o'clock)	Center CR≥10	-	85	-	deg.
		φ2(9 o'clock)		-	85	-	
	Ver.	θ2(12 o'clock)		-	85	-	
		θ1(6 o'clock)		-	85	-	
Uniformity					--		%

All left side data are based on TIAN XIAN WEI product reference only

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Note 1: Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

$$\text{Contrast Ratio (CR)} = L_{63} / L_0$$

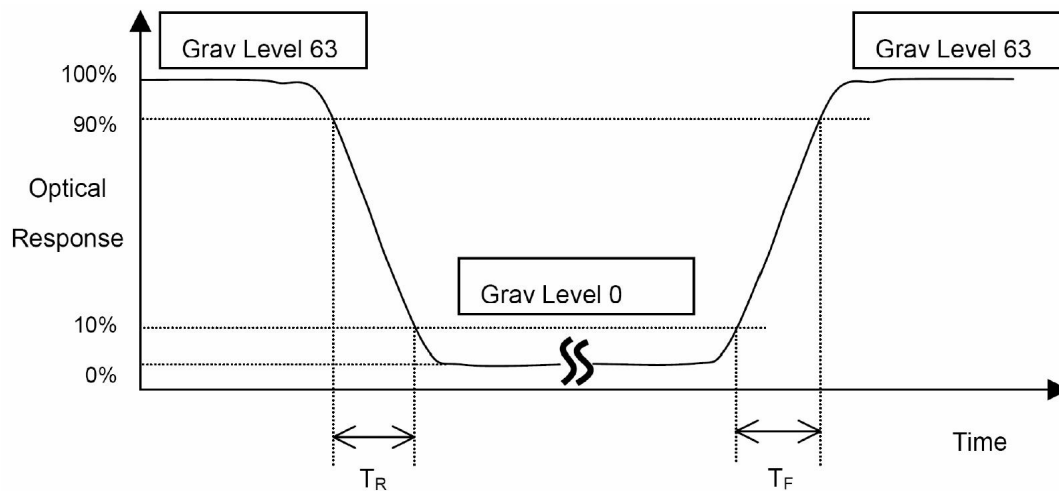
L63: Luminance of gray level 63

L0: Luminance of gray level 0

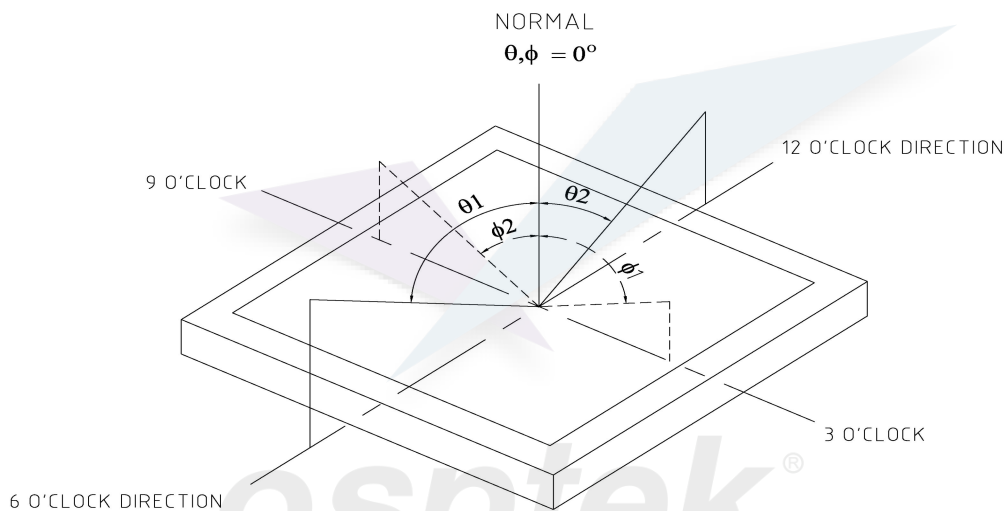
$$CR = CR(10)$$

CR (X) is corresponding to the Contrast Ratio of the point X at Figure in Note 5.

Note 2: Definition of Response Time (TR, TF):



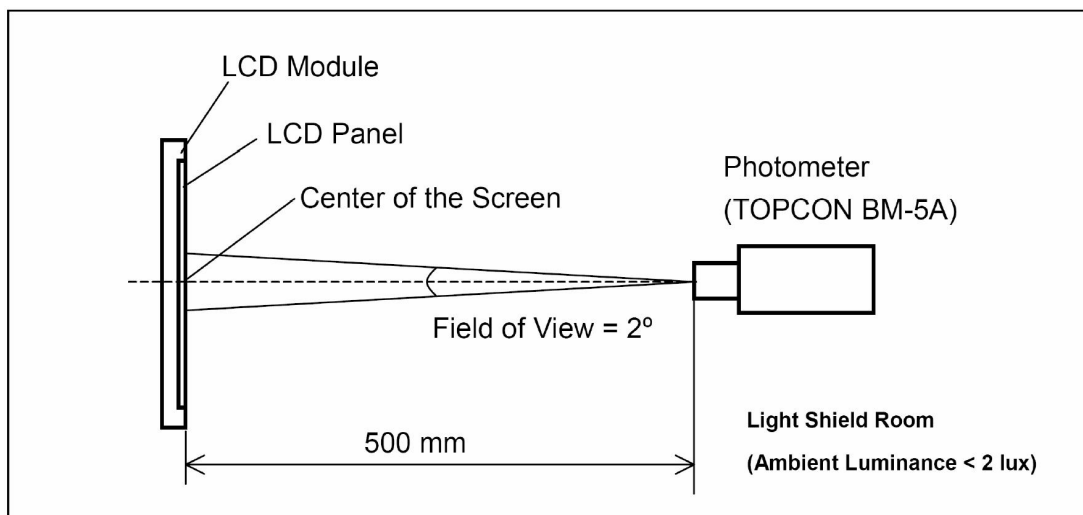
Note 3: Viewing Angle



The above “Viewing Angle” is the measuring position with Largest Contrast Ratio; not for good image quality. View Direction for good image quality is 6 O’clock. Module maker can increase the “Viewing Angle” by applying Wide View Film.

Note 4: Measurement Set-Up:

The LCD module should be stabilized at a given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 20 minutes in a windless room.



8. Reliability Test Item

Item	Test Conditions		Remark
High Temperature Storage	Ta = 60°C	240hrs	Note 1, Note 4
Low Temperature Storage	Ta = -20°C	240hrs	Note 1, Note 4
High Temperature Operation	Ts = 50°C	240hrs	Note 2, Note 4
Low Temperature Operation	Ta = -10°C	240hrs	Note 1, Note 4
Operate at High Temperature and Humidity	Ta=40°C H=90%RH	240hrs	Note 4

Note 1: Ta is the ambient temperature of samples.

Note 2: Ts is the temperature of panel's surface.

Note 3: 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 4: Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.

9. Packing Method----TBD

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