



PHOENIX DISPLAY INTERNATIONAL, INC.

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SPECIFICATION FOR LCD MODULE

CUSTOMER	
PART NUMBER	PDI080HH002-01
DESCRIPTION	8.0" 1024 * (RGB) * 600
VERSION	V1.1
ISSUE DATE	26-Apr-18

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1. LCM Specification

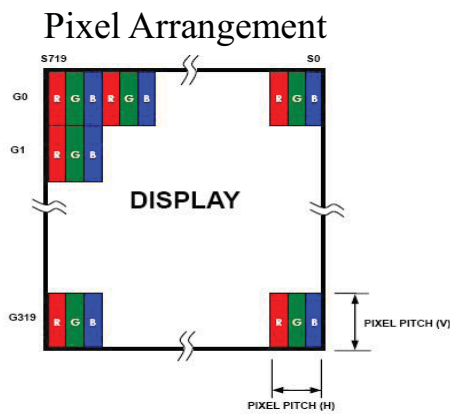
1.1 Description

PDI080HH002-01 is a transmissive type color active matrix liquid crystal display (LCD) which uses amorphous thin film transistor (TFT) as switching devices. This product is composed of a TFT LCD panel, a drive IC, a FPC, and a WLED-backlight unit. The active display area is 8.0 inches diagonally measured and the native resolution is 1024*RGB*600. Features of this product are listed in the following table.

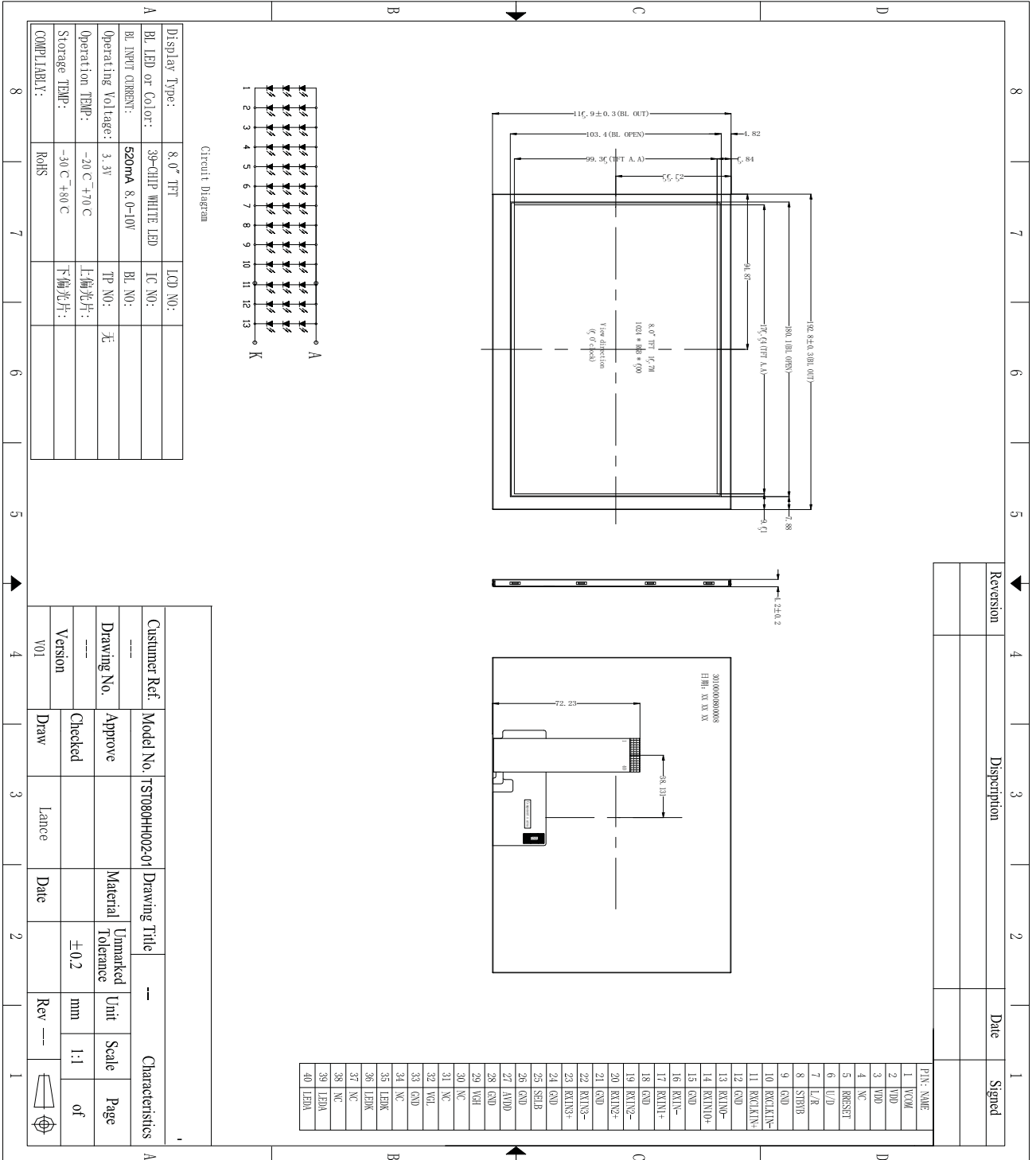
1.2 Functions & Features

Table1.1 Module Functions & Features

Parameter	Value	Unit
LCD Mode	a-Si TFT/transmissive	-
Color	16.7M	-
Display Resolution	1024*3(RGB)*600	pixels
Outline Dimension	192.8(W) *116.9(H) *4.2(T)	mm
Active Area(A.A)	176.64*(W) *99.36(H)	mm
Pixel Arrangement	RGB-stripe	-
Viewing Direction	12 O'clock	
Display Mode	Normally WHITE	
Surface Treatment	Anti-Glare,Hardness:3H	
Back-light	White LED*39CHIP	PCS
Operation Temperature	-20~60	°C
Storage Temperature	-30~70	°C



2. Mechanical Specification



3. Electrical Units

3.1 Electrical Specification

<Table3. Electrical specifications>

Item	Symbol	Unit	Value			Note
			Min	Typ	Max	
Power voltage	DVDD	V	3.0	3.3	3.6	Note2
	AVDD	V	10.8	11	11.2	
	VGH	V	17.7	18	18.3	-
	VGL	V	-10.3	-10	-9.7	
Input signal voltage	VCOM	V	4.2	4.5	4.8	Note4
Input logic high voltage	V _{IH}	V	0.7DVDD	-	DVDD	Note3
Input logic low voltage	V _{IL}	V	0	-	0.3DVDD	

Note 1: Be sure to apply DVDD and VGL to the LCD first, and then apply VGH.

Note 2: DVDD setting should match the signals output voltage (refer to Note 3) of customer's system board.

Note 3: DCLK,HS,VS,RESET,U/D, L/R,DE,R0~R7,G0~G7,B0~B7,MODE,DITHB.

Note 4: Typical VCOM is only a reference value. It must be optimized according to each LCM. Please use VR and base on below application circuit.

3.2 Pin Descriptions

3.2.1 TFT LCD Panel interface FPC Pin Description

Pin NO.	Function Descriptions	Symbol
1	Common Voltage	VCOM
2	Digital Power	VDD
3	Digital Power	VDD
4	Not connect	NC
5	Global rest pin	RESET
6	Vertical inversion	U/D
7	Horizontal inversion	L/R
8	Standby mode, Normally pulled high STBYB = “1” , normal operation STBYB = “0” , timing controller, source driver will turn off, all output are High-Z	STBYB
9	Power ground	GND
10	- LVDS differential clock input	RXCLKIN-
11	+LVDS differential clock input	RXCLKIN+
12	Power ground	GND
13	- LVDS differential data input	RXIN0-
14	LVDS differential data input	RXIN0+
15	Power ground	GND
16	- LVDS differential data input	RXIN1-
17	LVDS differential data input	RXIN1+
18	Power ground	GND
19	- LVDS differential data input	RXIN2-
20	LVDS differential data input	RXIN2+
21	Power ground	GND
22	- LVDS differential data input	RXIN3-
23	LVDS differential data input	RXIN3+
24	Power ground	GND
25	6bit/8bit mode select	SELB
26	Power ground	GND

27	Power for Analog Circuit	AVDD
28	Power ground	GND
29	Gate ON Voltage	VGH
30	Not connect	NC
31	Not connect	NC
32	Gate OFF Voltage	VGL
33	Power ground	GND
34	Not connect	NC
35	LED Cathode	LED-
36	LED Cathode	LED-
37	Not connect	NC
38	Not connect	NC
39	LED Anode	LED+
40	LED Anode	LED+

Note1: If LVDS input data is 6 bits ,SELB must be set to High;
 If LVDS input data is 8 bits ,SELB must be set to Low.

Note2: When L/R=" 0" , set right to left scan direction.
 When L/R=" 1" , set left to right scan direction.
 When U/D=" 0" , set top to bottom scan direction.
 When U/D=" 1" , set bottom to top scan direction.

3.3.1 Electrical characteristics (Ta=25°C)

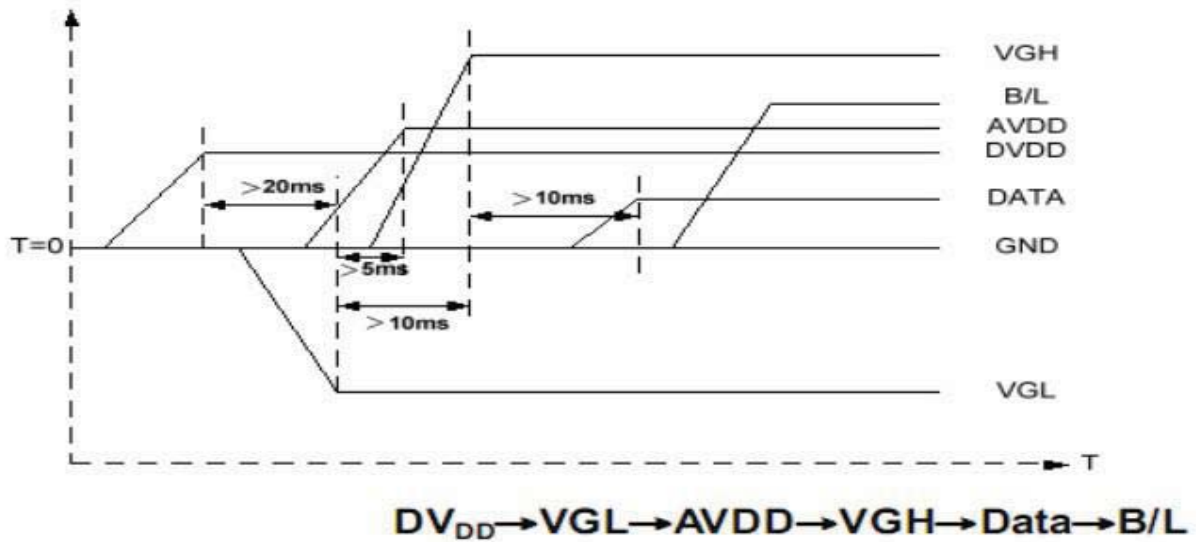
3.3.2 TFT-LCD Current Consumption

Table 3.2:

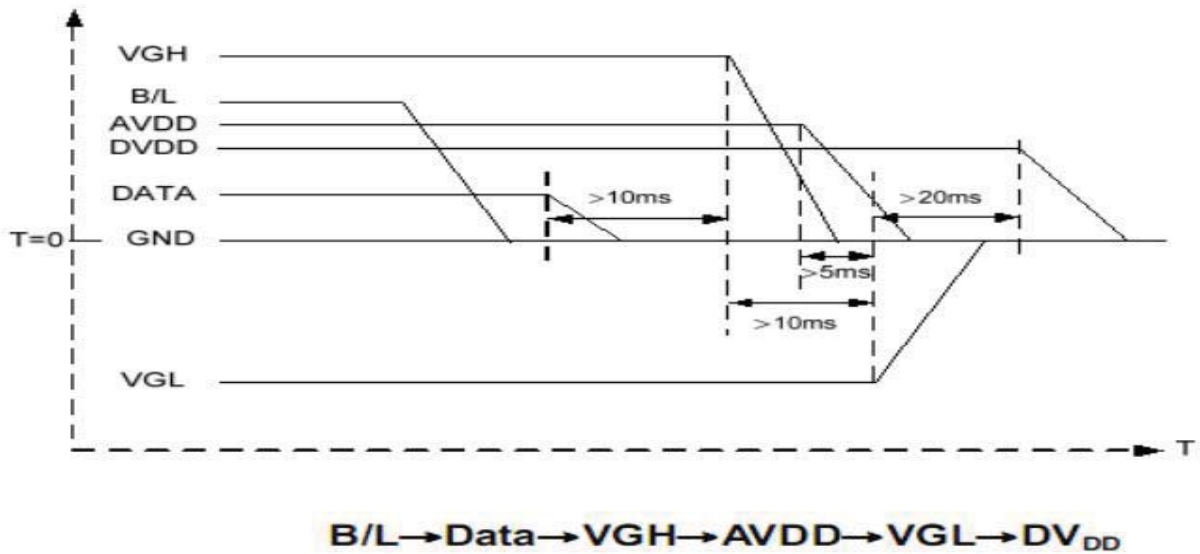
Item	Symbol	Unit	Test Condition	Min	Typ.	Max	Note
Gate on power current	IVGH	mA	VGH=18V	-	0.4	1.0	-
Gate off power current	IVGL	mA	VGL=-10V	-	1.6	1.0	-
Analog power current	IVDD	mA	VDD=3.3V	-	15.2	10	-
Analog power current	IAVDD	mA	AVDD=11V	-	19.5		

3.3 Power Sequence

Power ON:



Power OFF:



Note: Data include R0~R7, B0~B7, GO~G7, U/D, L/R, DCLK, HS,VS,DE.

3.4 Back-light Specification

Table 3.3 Back-light Specification

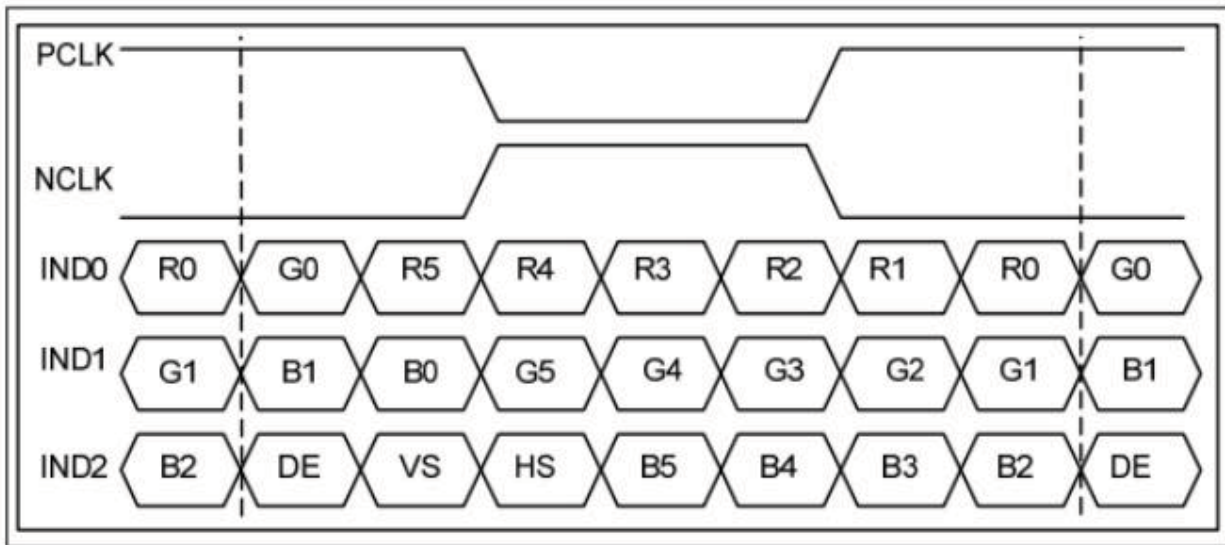
Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Supply Voltage	VF	Only	8.0	9.8	10.0	V
Supply Current	IF	Backlight	40*13=520			mA
Average Brightness	IV	Backlight Current	--	--	--	Cd/m2
CIE Color Coordinate	X	Backlight	0.25	-	0.315	-

	Y	Current	0.25	-	0.315	
Uniformity	B	Backlight Current	80	-	-	(%)
Color	White					

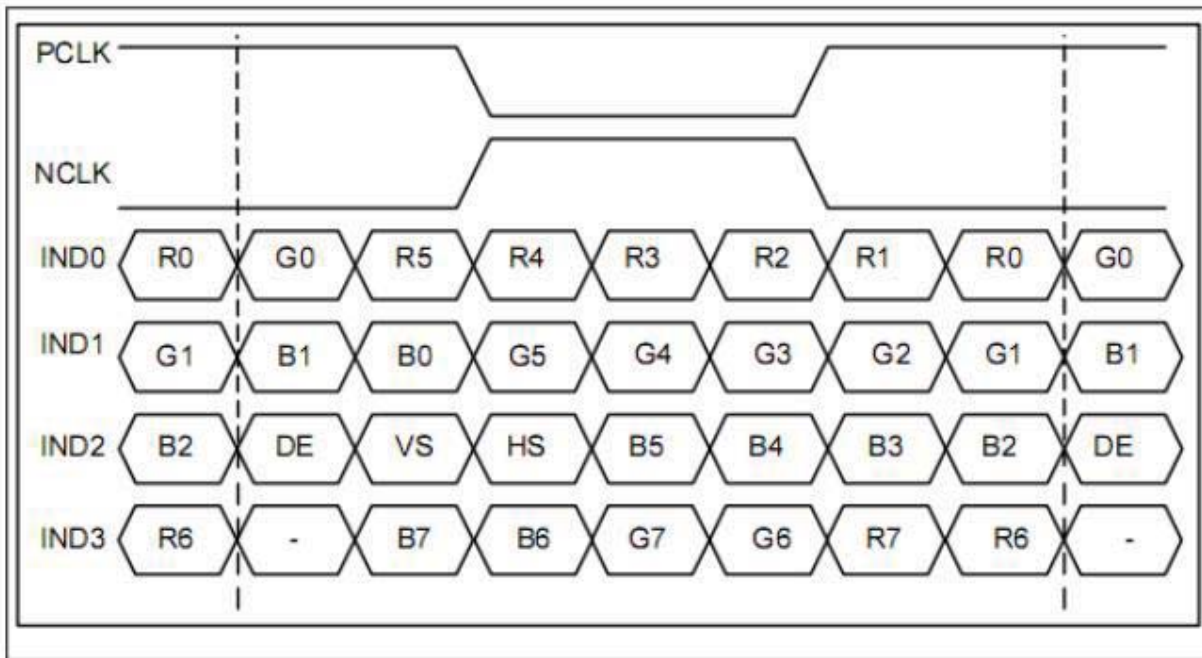
4. Timing Characteristics

4.1. Bit LVDS input

4.1.1. 6bit LVDS input



4.1.2. 8Bit LVDS input

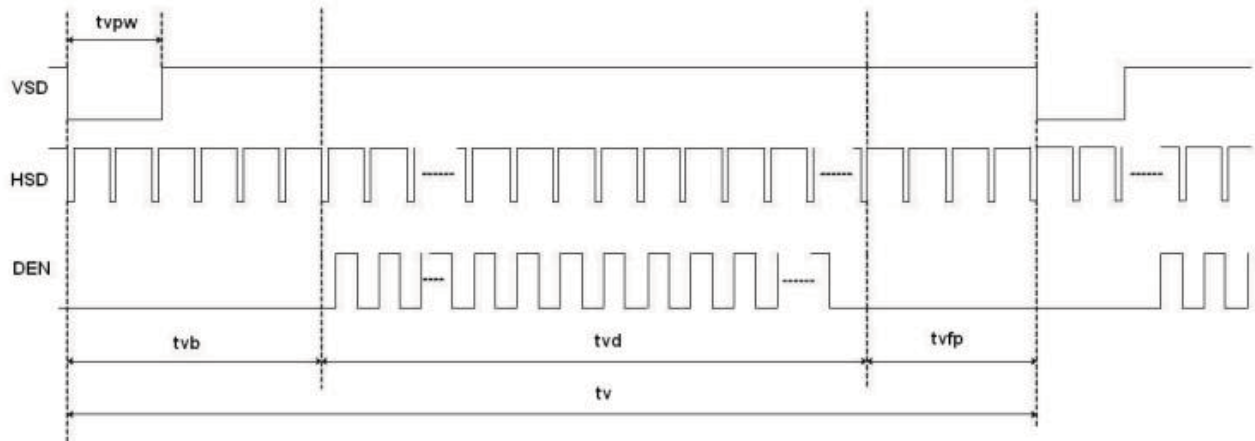


4.2. Interface Timing (DE mode)

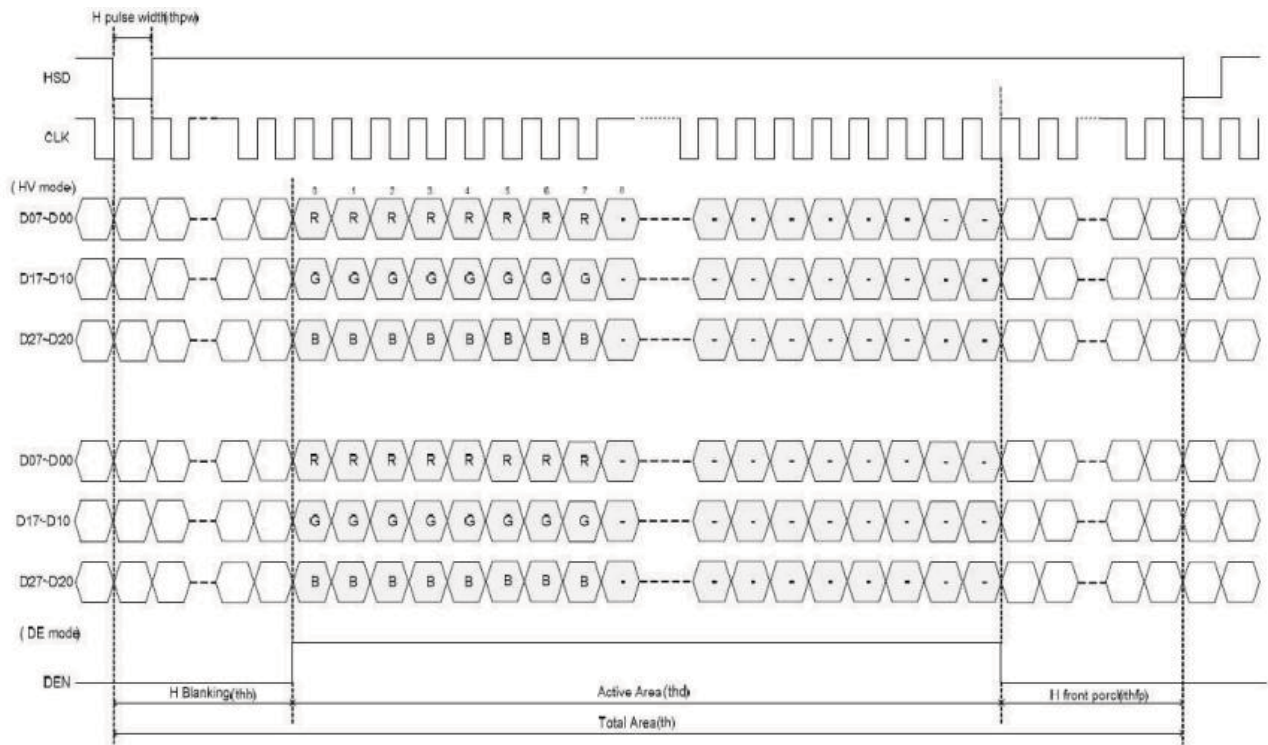
Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
DCLK frequency @Frame rate=60hz	fclk	40.8	51.2	67.2	Mhz
Horizontal display area	thd	1024			DCLK
HSYNC period time	th	1114	1344	1400	DCLK
HSYNC blanking	thb+thfp	90	320	376	DCLK
Vertical display area	tvd	600			H
VSYSNC period time	tv	610	635	800	H
VSYSNC blanking	tvb+tvfp	10	35	200	H

Timing Diagram of Interface Signal (DE mode)

(1) Vertical input timing



(2) Horizontal Vertical input timing



5 Optical Specifications

Item of electro-optical characteristics	Symbol	Condition	Min	Typ	Max	Unit	Remark
Contrast ratio	CR	$\Theta = 0^\circ$	600	800	--		Note1
Surface Luminance	YL	520mA	800	1000	--	Cd/ M ²	Note1
Color saturation	NTSC	-	--	50	--	%	
Response time	T _{on}	$\Theta = 0^\circ$	--	4	8	ms	Note2
	T _{of}		--	12	24		
Viewing angle range	$\Theta = 0^\circ$	Top	70	80	--		Note3
		Bottom	60	70	--		
		Left	70	80	--		
		Right	70	80	--		
Module Chromaticity CIE(x,y)	White	x	$\Theta = 0^\circ$	0.272	0.292	0.312	Note4
		y		0.310	0.330	0.350	
	Red	x		0.585	0.605	0.625	
		y		0.312	0.332	0.352	
	Green	x		0.283	0.303	0.323	
		y		0.580	0.600	0.620	
	Blue	x		0.131	0.151	0.171	
		y		0.083	0.103	0.123	
Transmittance	Trans	--	-	-	--	%	Note5
Cross talk	Ct	--	--	--	2	%	Note6

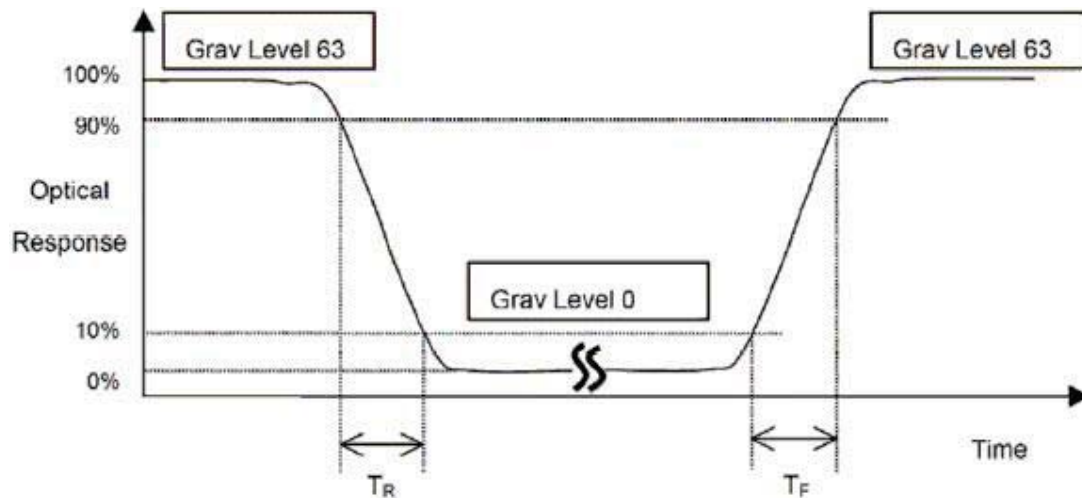
Notes(1) :1. All input terminals LCD panel must be ground while measuring the center area of the panel.

2. Contrast measurements shall be made at viewing angle of $\Theta = 0$ and at the center of the LCD surface. Luminance shall be measured with all pixels in the view field set first to white, then to the dark (black) state.

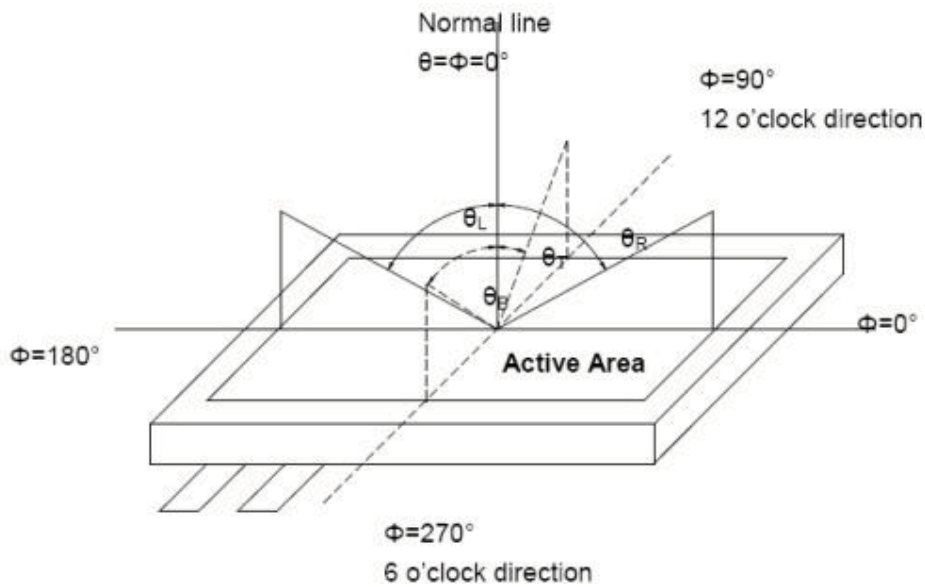
(see Figure 4) Luminance Contrast Ratio (CR) is defined mathematically

$$CR = \frac{\text{Luminance when displaying a white raster}}{\text{Luminance when displaying a black raster}}$$

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



Note (3) Definition of viewing Angle:

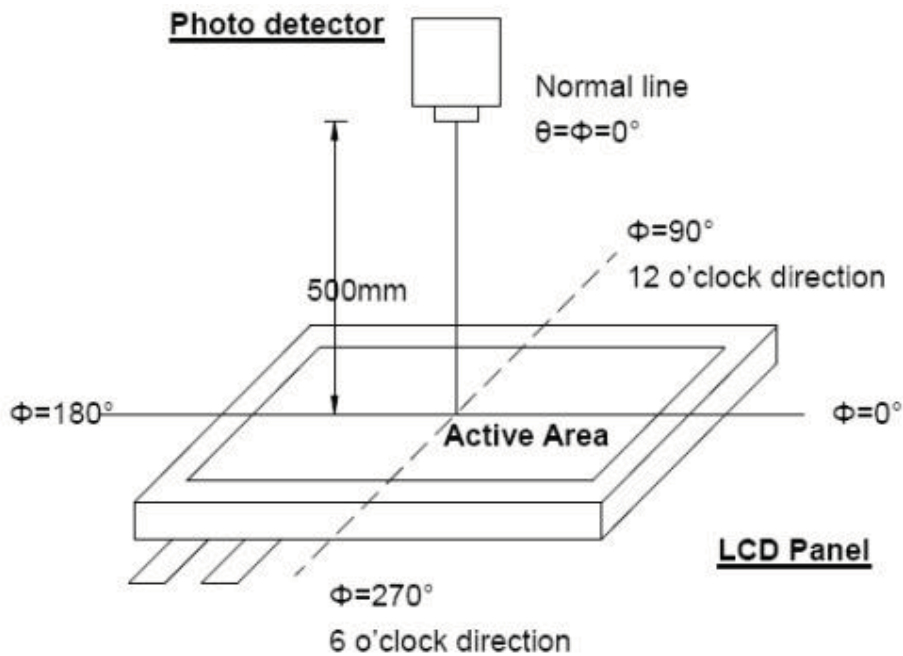


*** The above "Viewing Angle" is the measuring position with Largest Contrast Ratio; not for good image quality.

View Direction for good image quality is 6 O'clock. Module maker can increase the "Viewing Angle" by applying Wide View Film.

Note (4) Definition of optical measurement system.

The optical characteristics should be measured in dark room. The optical properties are measured at the center point of the LCD screen, (Response time is measured by Photo detector TOPCON BM-7, other items are measured by BM-5A/Field of view :1 ° /Height 500mm.)



Note (5) Definition of Transmittance

Where LMOD defined as measured luminance at center point of MOD with "White" state

LBL defined as measured luminance at center point of Backlight Unit with same MOD. The

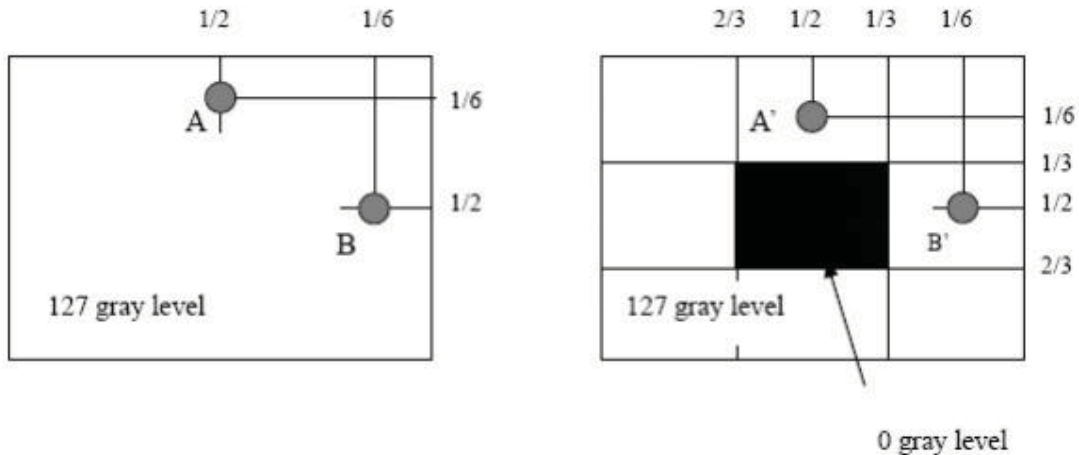
Backlight Unit has composite optical films, except "gain" characteristic optical films.

$$Tr\% = (LMOD / LBL) * 100\%$$

Note (5) Definition of crosstalk:

$$|LA - LA'| / LA \times 100\% \leq 2\% \text{ max.}, LA \text{ and } LA' \text{ are brightness at location A and } A'$$

$$|LB - LB'| / LB \times 100\% \leq 2\% \text{ max.}, LB \text{ and } LB' \text{ are brightness at location B and } B'$$



6 Reliability Test Items

NO.	Test Item	Test Condition	Check Time
1	High temp storage	T=80	240hrs
2	Low temp storage	T=-30	240hrs
3	High temp operation	T=70	240hrs
4	Low temp operation	T= -20	240hrs
5	High temp&high humidity	T=50 H=90%	240hrs

Reliability Test Criteria:

Display function should be no change under normal operating condition.

7. Handling Precautions

7.1 Safety

The liquid crystal in the LCD is poisonous. Keep away from your mouth and eyes. If the liquid crystal contacts with your skin, mouse or clothes, use soap to wash it off immediately.

7.2 Handling

- i. The LCD panel is made by thin glass. Prevent the panel from mechanical shock or putting excessive force on its surface.
- ii. The polarizer attached on the display is very easy to be damaged, handle it with special attention.
- iii. To avoid contamination on the display surface, do not touch the display surface with bare hands.
- iv. The transparent electrodes may be disconnected if you use the LCD panel under dew-condensing environment.
- v. The characteristics of the semiconductor devices may be affected when they are exposed to light, possibly resulting in malfunctioning of the ICs. To prevent such malfunctioning of the ICs, make sure the application and the mounting of the panel are designed so that the IC is not exposed to light.

7.3 Static Electricity

Ground soldering iron tips, tools and testers when you operate. Also ground your body when handling the products and store the products in an anti-electrostatic container.

7.4 Storage

Store the products in a dark place where the temperature is within the range of 25 ± 10 and with low humidity (65%RH or less). Do not store the LCD product in an atmosphere containing organic solvents or corrosive gases.

7.5 Cleaning

Do not wipe the polarizer with dry cloth, as it might cause scratching. Wipe the polarizer with a soft cloth soaked with petroleum IPA. Other chemical might damage the panel.

Packing

PARAMETER	Specification	Unit
Outside box	510(L)x350(W)x185(H)	mm
Inside box		mm
Product quantity of Inside box	48	pcs
Total product quantity	48	pcs
Total weight	8.5±0.5	KG
