

Product Specification

PART NUMBER # REV: FLC-173MTL6200001#00

DESCRIPTION: TFT 17.3"W, 1920(H)*1080(V), LVDS,
16.7M Color, 1000CD

- Preliminary Specification
- Approved Specification

Customer Name:	
Signature:	Date:

PREPARED BY	REVIEWED BY
<i>Kimberley</i>	<i>David</i>

Revision History

Version	Date	Page	Description	Note
V1.0	2022/05/03		First Edition	

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1. GENERAL DESCRIPTION

1.1 Description

This is a Color Active-Matrix Liquid Crystal Display composed of a TFT-LCD panel, a LED driver circuit, and a LED backlight system. The screen format is intended to support the FHD (1920(H) x 1080(V)) screen and 16.7M colors (RGB 6-bits + HiFRC data). All input signals are LVDS interface compatible. Inverter card of backlight is not included.

1.2 Product Summary

The following items are summary on the table under Ta=25 °C condition:

No.	Item	Specification	Unit
1	Display Size	17.3" w	Inch
2	Pixel Number	1920 (H) x 3(RGB)x 1080 (V)	Pixels
3	Outline Dimension	403 (H) x 240 (V) x 12.5 (D)	mm
4	Active Area	381.888 (H) x 214.812 (V)	mm
5	Pixel Pitch	0.1989 (H) x 0.1989 (V)	mm
6	Display Colors	16.7M colors (RGB 6-bit data + HiFRC data)	
7	Pixel Arrangement	RGB vertical stripe	-
8	Display Mode	Normally White	-
9	Electrical Interface	LVDS	-
10	Surface Treatment	Hard-coating (3H), Glare treatment	-
11	Brightness	1000 (Typ.)	cd/m ²
12	Contrast Ratio	600:1 (Typ.)	-
13	Power Consumption	5 (VDD) +20.52 (BLU +Driver Typ)	W
14	Weight	1080 (Typ)	g

2. ABSOLUTE MAXIMUM RATING

2.1 Electrical Absolute Rating

Item	Symbol	Values			Unit	Note
		Min	Typ	Max		
TFT Power Supply Voltage	VDD	-0.3	-	+3.6	V	

2.3 Environment Absolute Rating

Item	Symbol	Values			Unit	Note
		Min	Typ	Max.		
Operating Temperature	Top	0	-	+70	°C	
Storage Temperature	Tstg	-20	-	+70	°C	

TFT surface temperature

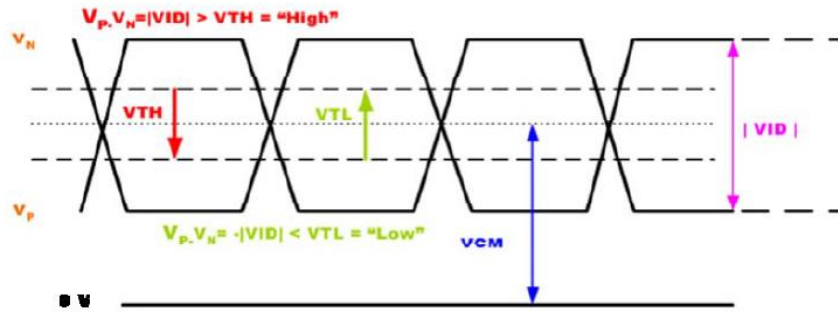
3. ELECTRICAL CHARACTERISTICS

3.1 TFT LCD Module

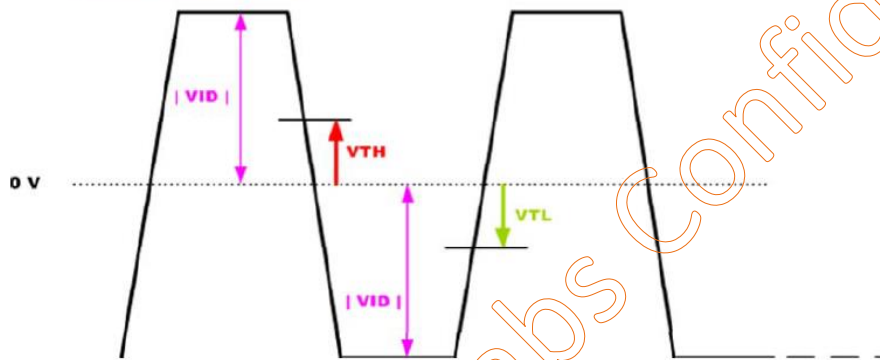
Item	Symbol	Values			Unit	Note
		Min	Typ	Max		
Power supply voltage	VDD	3.0	3.3	3.6	V	
Power Current	I _{VDD}	-	1200	1400	mA	
Inrush Current	I _{Rush}	-	-	2000	A	
Allowable	VDD _{rp}	-	-	100	mV	
Differential Input High Threshold	V _{TH}	-	-	100	mV	V _{CM} =1.2V
Differential Input Low Threshold	V _{TL}	-100	-	-	mV	V _{CM} =1.2V
Input Differential Voltage	V _{ID}	100	400	600	mV	
Differential Input Common Mode Voltage	V _{ICM}	1.125	-	1.375	V	V _{TH} /V _{TL} =+-100mV

3.2 Signal Electrical Characteristics

Single-end Signal



Differential Signal



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3.3 Backlight Characteristics

Parameter guideline for LED driving is under stable conditions at 25°C (Room Temperature):

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
LED Light Bar Forward Current	IF	-	570		mA	
LED Light Bar Forward Voltage	VF	-	36	-	V	
LED Power Consumption	PLED	-	20.52	-	Watt	
Operating LED life time	Hr	50000		-	Hours	

Note 1: Ta means ambient temperature of TFT-LCD module.

Note 2: VCC, IVCC, PVCC are defined for LED backlight with LED Driver.(100% duty of PWM dimming)

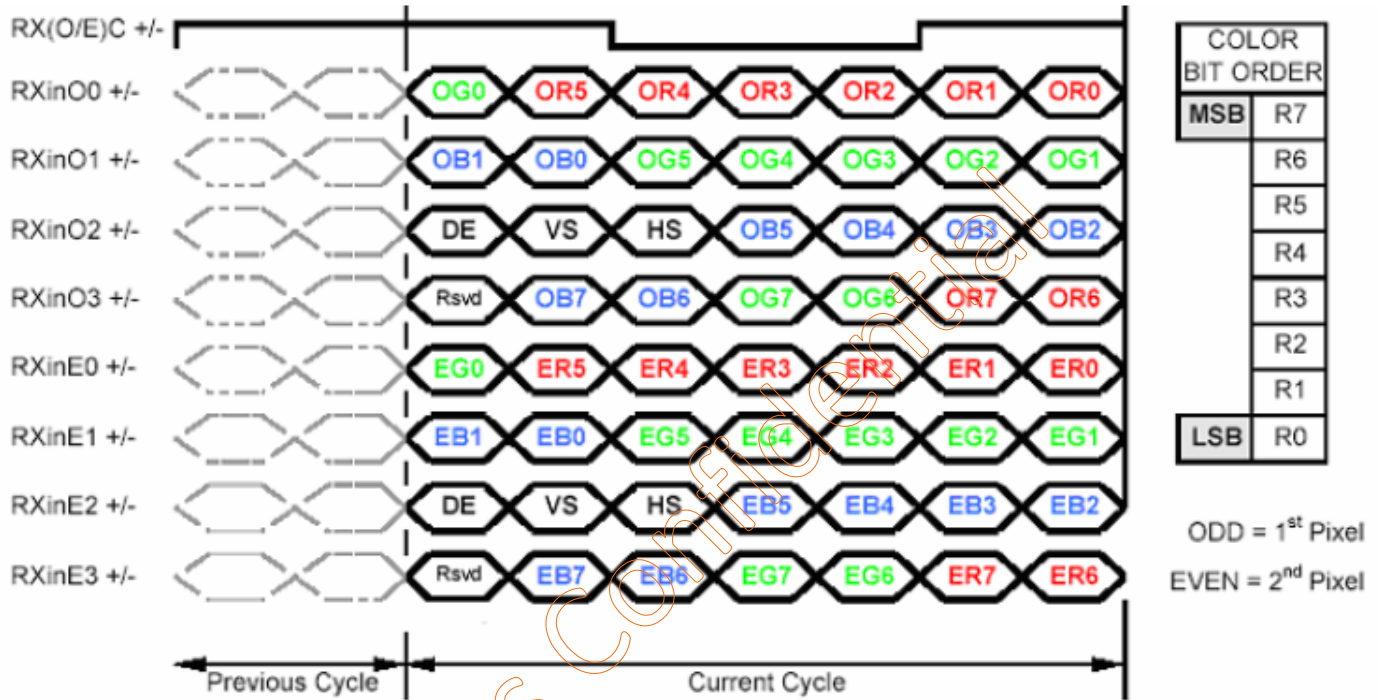
Note 3: If this module is driven by high current or at high ambient temperature & humidity condition. The operating life will be reduced.

Note 4: Operating life means brightness goes down to 50% initial brightness. Minimum operating life time is estimated data.

Note 5: LED lifetime is definition: brightness is decreased to 50% of the initial value. LED lifetime is restricted under

4. Signal Characteristic

4.1 The Input Data Format



Note1: Normally, DE, VS, HS on EVEN channel are not used.

Note2: 8-bit in

5. INTERFACE PIN DESCRIPTION

5.1 LCM Connector PIN Assignment

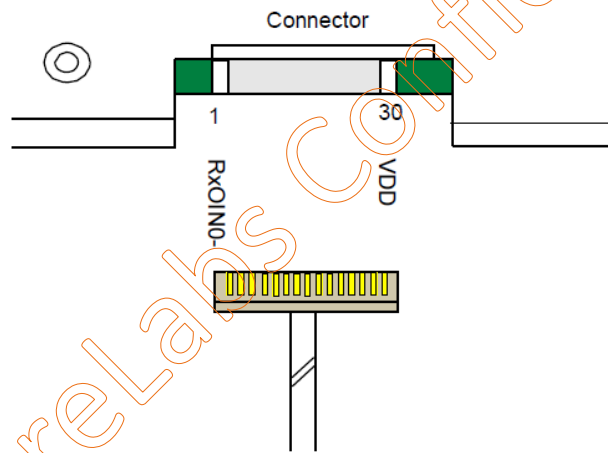
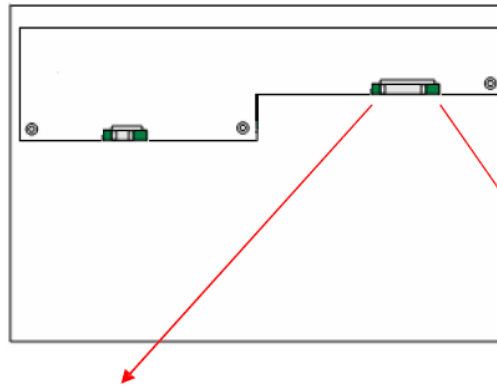
LVDS Connector:

Connector Name / Designation	Interface Connector / Interface card
Manufacturer	HRS
Type Part Number	MDF76TW-30S-1H
Mating Type Part Number	MDF76-30P-1C

Pin No.	Symbol	Description
1	RxOIN0-	Negative LVDS differential data input (Odd data)
2	RxOIN0+	Positive LVDS differential data input (Odd data)
3	RxOIN1-	Negative LVDS differential data input (Odd data)
4	RxOIN1+	Positive LVDS differential data input (Odd data)
5	RxOIN2-	Negative LVDS differential data input (Odd data, H-Sync,V-Sync,DSPTMG)
6	RxOIN2+	Positive LVDS differential data input (Odd data, H-Sync,V-Sync,DSPTMG)
7	VSS	Power Ground
8	RxOCLKIN-	Negative LVDS differential clock input (Odd clock)
9	RxOCLKIN+	Positive LVDS differential clock input (Odd clock)
10	RxOIN3-	Negative LVDS differential data input (Odd data)
11	RxOIN3+	Positive LVDS differential data input (Odd data)
12	RxEIN0-	Negative LVDS differential data input (Even data)
13	RxEIN0+	Positive LVDS differential data input (Even data)
14	VSS	Power Ground
15	RxEIN1-	Negative LVDS differential data input (Even data)
16	RxEIN1+	Positive LVDS differential data input (Even data)

Pin No.	Symbol	Description
17	VSS	Power Ground
18	RxEIN2-	Negative LVDS differential data input (Even data)
19	RxEIN2+	Positive LVDS differential data input (Even data)
20	RxECLKIN-	Negative LVDS differential clock input (Even clock)
21	RxECLKIN+	Positive LVDS differential clock input (Even clock)
22	RxEIN3-	Negative LVDS differential data input (Even data)
23	RxEIN3+	Positive LVDS differential data input (Even data)
24	VSS	Power Ground
25	VSS	Power Ground
26	VSS	Power Ground
27	VSS	Power Ground
28	VDD	+3.3V Power Supply
29	VDD	+3.3V Power Supply
30	VDD	+3.3V Power Supply

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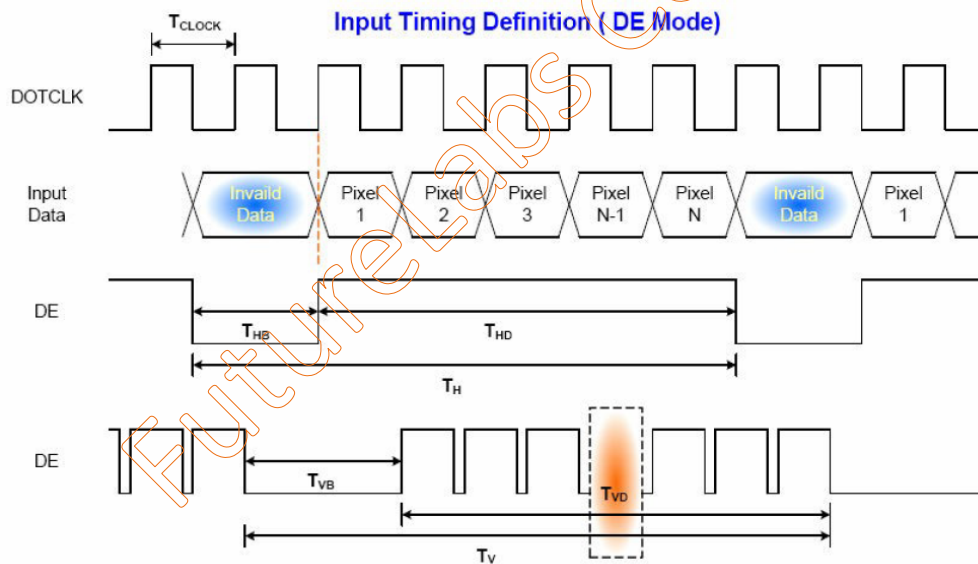


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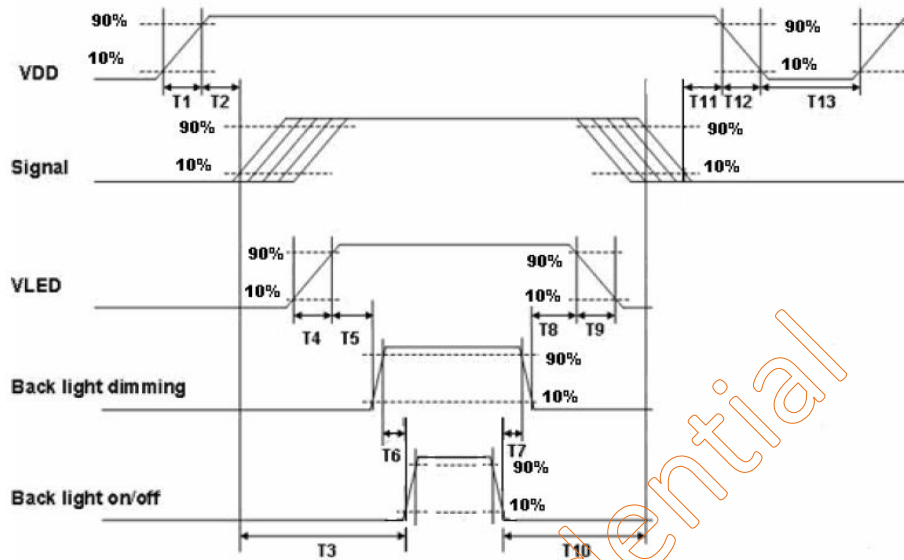
5.2 Timing Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	
Frame Rate	-	50	60	-	Hz	
Clock frequency	$1/T_{\text{Clock}}$	50	74.9	85	MHz	
Vertical Section	Period	T_V	1088	1130	1680	T_{Line}
	Active	T_{VD}	1080			
	Blanking	T_{VB}	8	50	-	
Horizontal Section	Period	T_H	990	1050	-	T_{Clock}
	Active	T_{HD}	960			
	Blanking	T_{HB}	30	90		

5.3 Timing Diagram



5.4 Power ON/OFF Sequence



Power Sequence Timing				
Parameter	Value			Units
	Min.	Typ.	Max.	
T1	0.5	-	10	ms
T2	0	-	50	
T3	200	-	--	
T4	0.5	-	10	
T5	10	-	-	
T6	10	-	-	
T7	0	-	-	
T8	10	-	-	
T9	-	-	10	
T10	110	-	-	
T11	0	-	50	
T12	0	-	10	
T13	500	-	-	

5.5 LED connector

Connector Name / Designation	LED Connector
Connector Model Number	A20D/HD2-2P
Mating Model Number	S2B-PH-SM4-TB

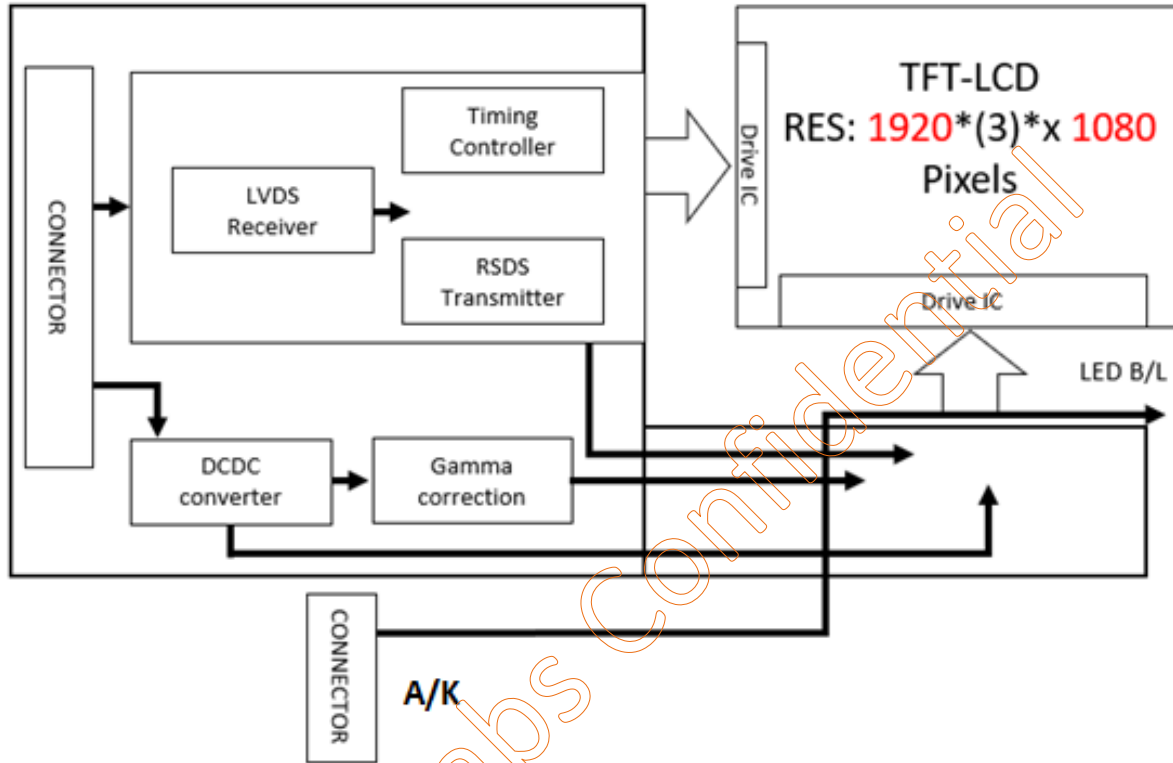
Pin No.	Input	Color	Function
1	HV	Red	LED V+
2	LV	Black	LED V-



Connector
PHR-2 PIN 1 (Red wire)

6. BLOCK DIAGRAM

The following diagram shows the functional block of the 17.3 inches Color TFT-LCD Module:



7. OPTICAL CHARACTERISTIC

The optical characteristics are measured under stable conditions at room temperature 25 °C.

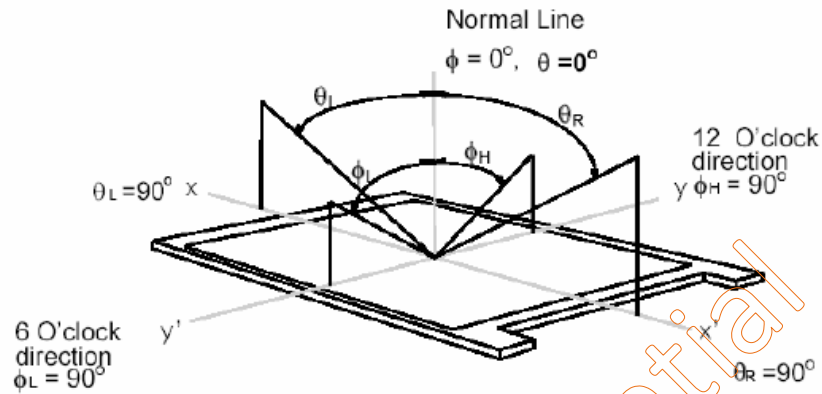
Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Contrast Ratio		CR	$\theta_x=0^\circ$	500	600	-	-	(4)
Response Time		T _R	25°C	-	40	60	ms	(4)(5)
		T _F						
Center Luminance of White		LC	$\theta_x=0^\circ, \theta_y=0^\circ$ Viewing angle at normal direction	900	1000	-	cd/m ²	(4)
Brightness uniformity				72			%	
Chromaticity	Red	R _x		$\theta_x=0^\circ, \theta_y=0^\circ$ Viewing angle at normal direction	Typ. -0.05	0.640	Typ. +0.05	-
		R _y	0.346			-		
	Green	G _x	0.314			-		
		G _y	0.624			-		
	Blue	B _x	0.150			-		
		B _y	0.054			-		
	White	W _x	0.305			-		
		W _y	0.318			-		
Viewing Angle	Horizontal	θ_{x+}	CR=10	70	80	-	Deg.	(1)
		θ_{x-}		70	80	-		
	Vertical	θ_{y+}		50	60	-		
		θ_{y-}		70	80	-		

Optical Equipment: BM-5A, BM-7, PR880, or equivalent

The following optical specifications shall be measured in a darkroom or equivalent state (ambient luminance <2 lux, and at room temperature). The room temperature is 25°C±2°C.

Note 1: Definition of Viewing Angle

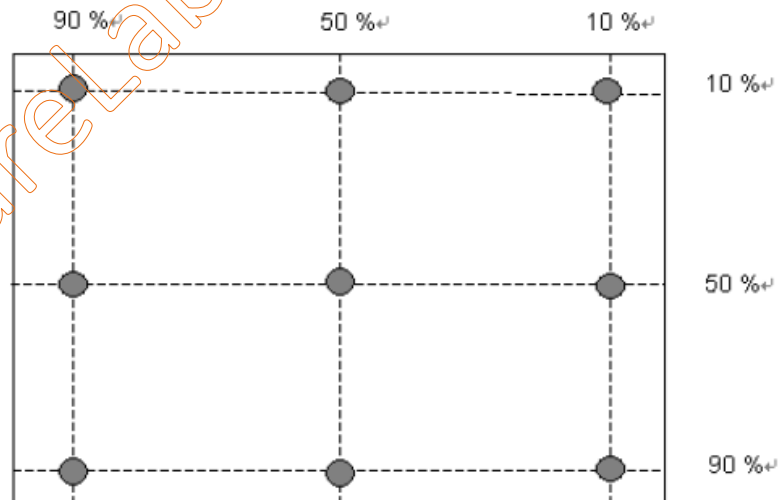
Viewing angle is the measurement of contrast ratio ≥ 10 , or ≥ 5 , at the screen center, over a 180° horizontal and 180° vertical range (off-normal viewing angles). The 180° viewing angle range is broken down as follows; 90° (θ) horizontal left and right and 90° (Φ) vertical, high (up) and low (down). The measurement direction is typically perpendicular to the display surface with the screen rotated about its center to develop the desired measurement viewing angle.



Note 2: Note 2: 13 points position

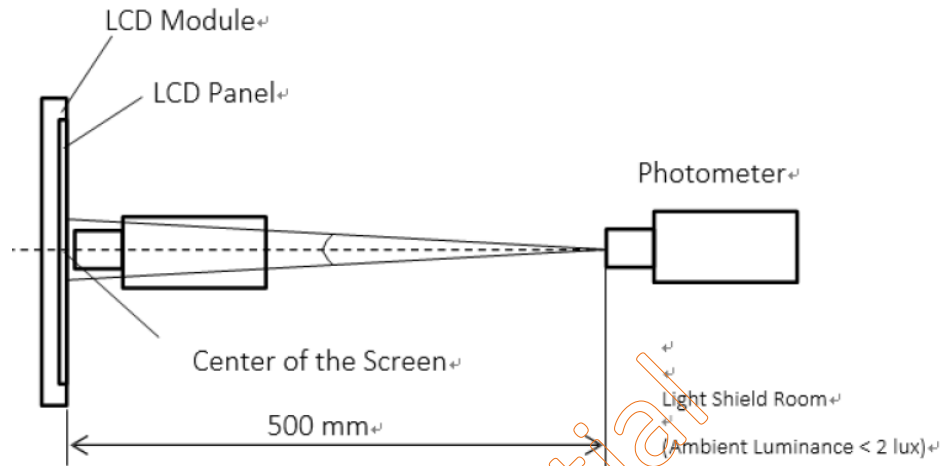
Note 3:

$$\delta_{WL3} = \frac{\text{Minimum Luminance of 1~9 points}}{\text{Maximum Luminance of 1~9 points}}$$



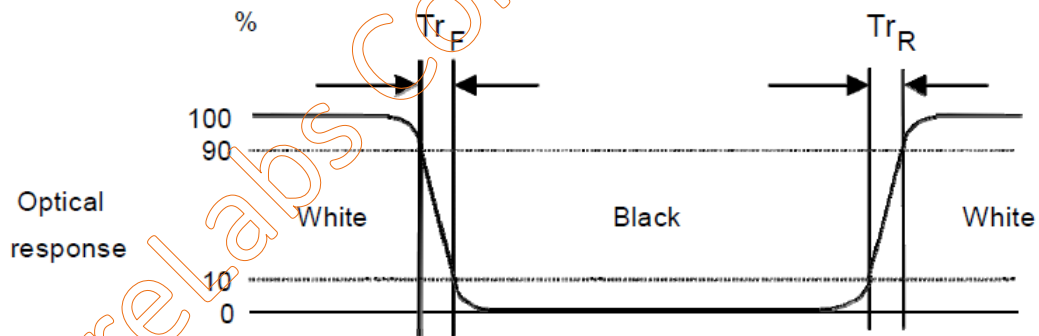
Note 4: Measurement method

The LCD module should be stabilized at given temperature for 3 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 3 minutes in a stable, windless and dark room.



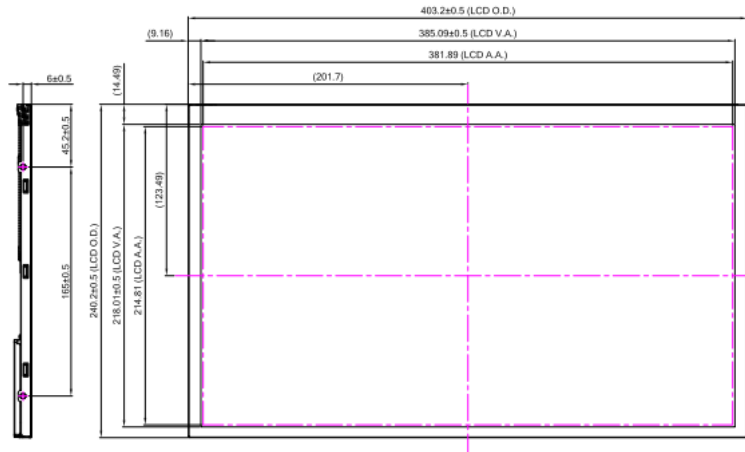
Note 5: Definition of response time:

The output signals of photo detector are measured when the input signals are changed from “Full Black” to “Full White” (rising time), and from “Full White” to “Full Black” (falling time), respectively. The response time is interval between the 10% and 90% of amplitudes. Please refer to the figure as below.

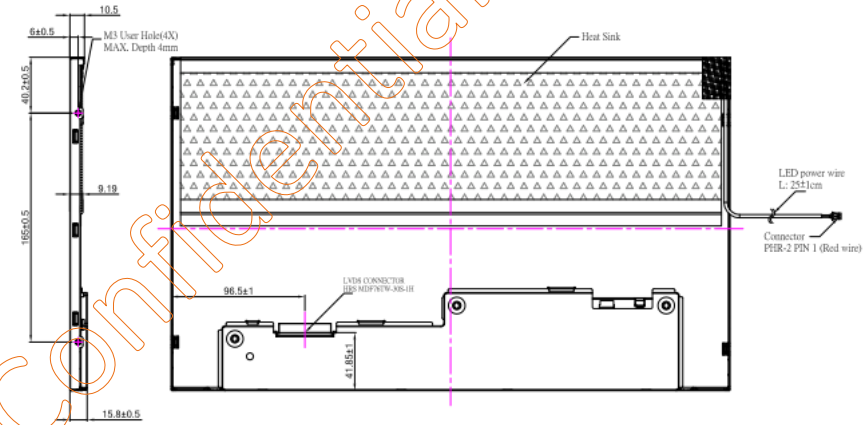


9. DIMENSION AND DRAWING

Front VIEW




Back VIEW



- NOTES:**
- 1.General tolerance are ±0.5mm
 - 2.ROHS complied

CN1 Pin Define					
PIN	SYMBOL	PIN	SYMBOL	PIN	SYMBOL
1	RxOIN0-	11	RxOIN3+	21	RxECLKIN+
2	RxOIN0+	12	RxEIN0-	22	RxEIN3-
3	RxOIN1-	13	RxEIN0+	23	RxEIN3+
4	RxOIN1+	14	VSS	24	VSS
5	RxOIN2-	15	RxEIN1-	25	VSS
6	RxOIN2+	16	RxEIN1+	26	VSS
7	VSS	17	VSS	27	VSS
8	RxOCLKIN-	18	RxEIN2-	28	VDD
9	RxOCLKIN+	19	RxEIN2+	29	VDD
10	RxOIN3-	20	RxECLKIN-	30	VDD

Customer Approval	Part Number # Rev.	FLC-173MTL6200001	#00
Date	Rev. No	Date	Drawn
Company	Checked	Date	Approved
Signature	Date	Design By	Date
		Check By	Date
		Approved By	Date



10. PRECAUTION AND PRODUCT HANDLING

- Do not apply the external force such as bending or twisting to the LCD panel and backlight during assembly.
- Do not insert and plug out the input connector while the LCD panel is operating.
- Do not take apart the panel or frame from LCD module assembly or insert anything into the backlight unit.
- Do not keep the same pattern in a long period of time, it may cause image sticking on LCD panel. Can use shuffle content periodically if fixed pattern is displayed on the screen.
- Do not touch the display area with bare hands, this will stain the display area.
- Pay attention to handle lead wire of backlight, that is not tugged in connect with LED driver.
- Do not change variable resistance settings in LCD panel, it may cause not satisfy of LCD characteristics specification.
- The surface of LCD panel's polarizer is very soft and easily scratched, please use a very soft dry cloth without chemicals for cleaning.
- To avoid the static electricity to damage the CMOS LSI, the operator should be grounded when in contact with the LCD panel, and also to all electrical equipment.
- Need to follow the correct power frequency when LCD panel is connecting and operating, this can avoid damage to CMOS LSI during latch-up.
- Need to store the LCD panel indoor without the exposure of sunlight where the temperature is $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ and the humidity is below 60% RH.