YOURITech
AN EUROTECH COMPANY

INDUSTRIAL STRENGTH...
Start Your Application From YOURITECH

Integration support
Obsolescence Management
PCAP
Embedded Systems
Human Machine Interface
Touch Solutions
Production
Custom designs
Installation
Software
Mechanical design
Quality Management
Open Frame Monitors
LCD Controller
Research & Development
Firmware
EMC tests
on-site service
In-house Manufacturing
Optical Bonding
Cover glass
System solutions
OEM Solutions
Custom Display

Erotech YOURITech AN EUROTECH COMPANY AOSHITE 奥视特 Your Reliable Display Panel and Smart Touch Embedded Solution Partner

For more information about comprehensive display panels and touch embedded solutions, welcome contact us at:

https://www.youritech.com
info@youritech.com

■ Preliminary Specifications

☐ Final Specifications

Title	15.6-inch LCM Product Specifications
Model Name	ET156FH01-R
Version	P1

Customer Approved by Date
Notice: This Specification is subject to change without notice.

Approved By	Prepared By
Leo 2025-08-17	Aurice 2025-08-17

REVISION HISTORY

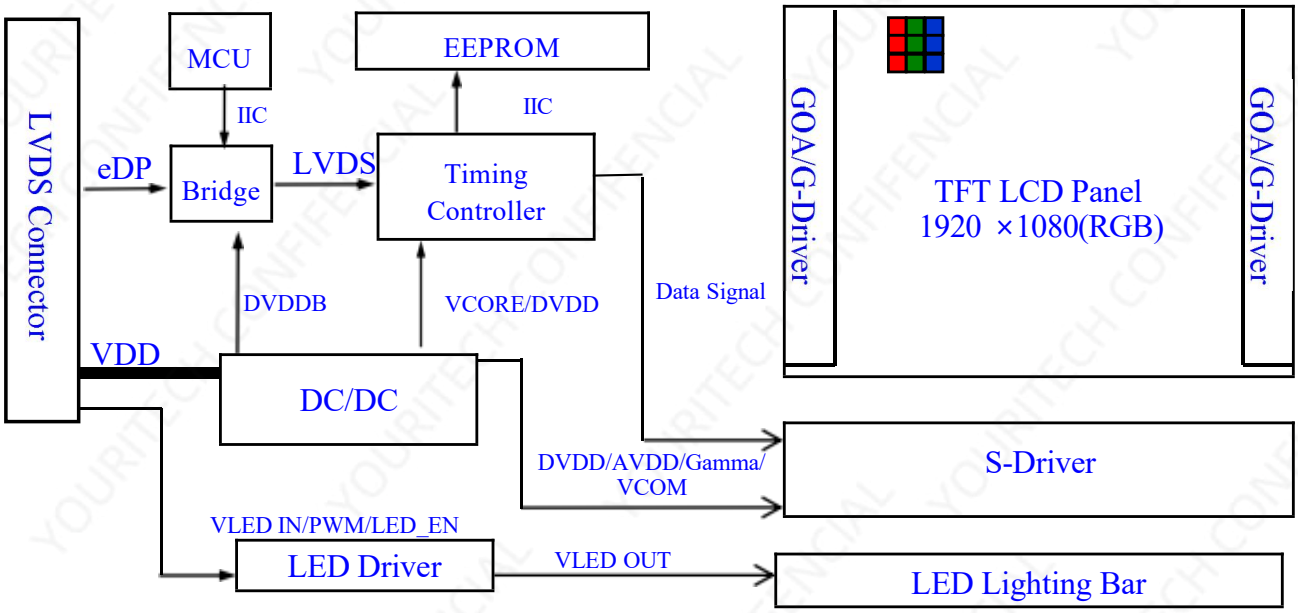
REV.	ECN NO.	DESCRIPTION OF CHANGES	DATE	PREPARED
P0	-	Initial Release	2023.11.17	ARIC
P1	-	Final Specification	2025.08.17	William

Contents

1.0 GENERAL DESCRIPTION

1.0.1 Introduction

ET156FH01-R is a color active matrix TFT LCD module using amorphous silicon TFT's (Thin Film Transistors) as an active switching devices. This module has a 15.6 inch diagonally measured active area with FHD resolutions (1920 horizontal by 1080 vertical pixel array). Each pixel is divided into RED, GREEN, BLUE dots which are arranged in vertical stripe and this module can display 16.7 M colors.



1.0.2 Features

- LVDS interface
- RoHS Compliant

1.0.3 Application

- Charging pile

1.0.4 General Specification

< Table 1. General Specifications >

Parameter	Specification	Unit	Remarks
Active area	344.16(H) ×193.59(V)	mm	
Number of pixels	1920 (H) ×1080 (V)	Pixels	
Pixel pitch	179.25(H) ×179.25(V)	mm	
Pixel arrangement	RGB Vertical stripe		
Display colors	16.7M(8bit)	Colors	
Display mode	Normally Black		
Dimensional outline	353.36*208.09*6.6	mm	
Backlight power consumption	18.56W Typ.	w	
Weight	TBD	g	
Surface treatment	Anti-Glare		

2.0 ABSOLUTE MAXIMUM RATINGS

The followings are maximum values which, if exceed, may cause faulty operation or damage to the unit. The operational and non-operational maximum voltage and current values are listed in Table 2.

< Table 2. Environment Absolute Maximum Ratings> [Ta =25：2℃]

Parameter	Symbol	Min.	Max.	Unit	Remarks
Operating Temperature	T_{OP}	-20	80	℃	Environment Temperature
Storage Temperature	T_{ST}	-30	80	℃	
Operating Ambient Humidity	Hop	-20	+80	%RH	
Storage Humidity	Hst	-30	+85	%RH	
Heat Release Requirement	Trls	15		℃	Note3 仅适用于Q/Single/FOG出货项目

Note:
1. These range above is maximum value not the actual operating temperature . Actual Operating temperature is no more than 40℃ and temperature refers to the LCM surface temperature ;
2.BOE is not responsible for product problems beyond the use conditions.
3.When the ambient temperature is T ℃, the surface temperature of Panel can not exceed (T+15)℃.

3.0 ELECTRICAL SPECIFICATIONS

3.0.1 TFT LCD Module

< Table 3. LCD Module Electrical Specifications > [Ta =25 : 2℃]

Parameter			Min.	Typ.	Max.	Unit	Remarks
Power Supply Voltage		V_{DD}	3.0	3.3	3.4	V	Note 1
Power Supply Inrush Current		Inrush	-	-	3	A	Note3
Power Supply Current	Mosaic	I_{DD}	-	326	420	mA	Note 1
	RGB		-	478	620	mA	
Power Consumption	Mosaic	P_M	-	1.08	1.40	W	
	RGB	P_{RGB}	-	1.57	2.10	W	
	BLU	P_{BL}	-	-	-	W	Note 2
	Total	P_{Total}	-	-	-	W	@Mosaic

3.0.2 Backlight Driving

The backlight system is an edge-lighting type with white-LED.

(It is usually required to measure under the following condition: Ta=25℃±2℃)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Remark
Power supply voltage for LED Driver		V_{LED}		TBD		V	
LED Power consumption		P_{LED}	-	-	18.56	W	
EN Control Level		Backlight on	2			V	
LED Forward Voltage		V_F	-	30.0	32.0	V	
LED Forward Current		I_F	-	580	-	mA	
LED Lifetime		N/A	50,000	-	-	Hour	
PWM Control Level	PWM High Level		2			V	
PWM Control Frequency	PWM Low Level		0		0.8	V	
	F_{PWM}		200		20	KHz	
DutyRatio		-	25		100	%	

3.0 ELECTRICAL SPECIFICATIONS

3.1 Electrical Specifications

Notes：

1. The supply voltage is measured and specified at the interface connector of LCM.
   The current draw and power consumption specified is for 3.3V at 25 。C.
   a) Mosaic pattern 8*8
   b) R/G/B patterns

(a) (b)

Figure 3. Power Measure Patterns

2. Calculated value for reference (V_{LED} × I_{LED})
3. Measure condition (Figure 4)

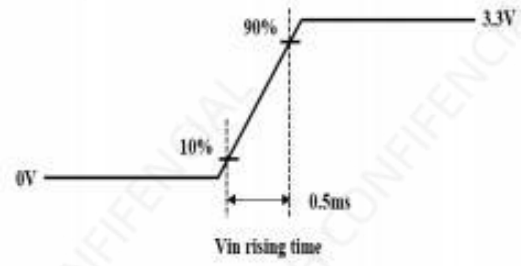


Figure 4. Inrush Measure Condition

4.0 INTERFACE CONNECTION.

4.0.1 Electrical Interface Connection

The electronics interface connector is 20455-040E.

<Table 6. Pin Assignments for the Interface Connector>

Terminal	Symbol	Functions
Pin No.	Symbol	Description
1	LED_VCC	LED Power Supply,12V(typical)
2	LED_VCC	LED Power Supply,12V(typical)
3	LED_VCC	LED Power Supply,12V(typical)
4	LED_VCC	LED Power Supply,12V(typical)
5	GND	Ground
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	LED_EN	LED Enable
10	LED_PWM	LED PWM Control
11	LCD_VCC	LCD Power Supply,3.3V(typical)
12	LCD_VCC	LCD Power Supply,3.3V(typical)
13	LCD_VCC	LCD Power Supply,3.3V(typical)
14	NC	No Connection
15	NC	No Connection
16	NC	No Connection
17	GND	Ground
18	RXO0-	-LVDS differential data input
19	RXO0+	+LVDS differential data input
20	RXO1-	-LVDS differential data input

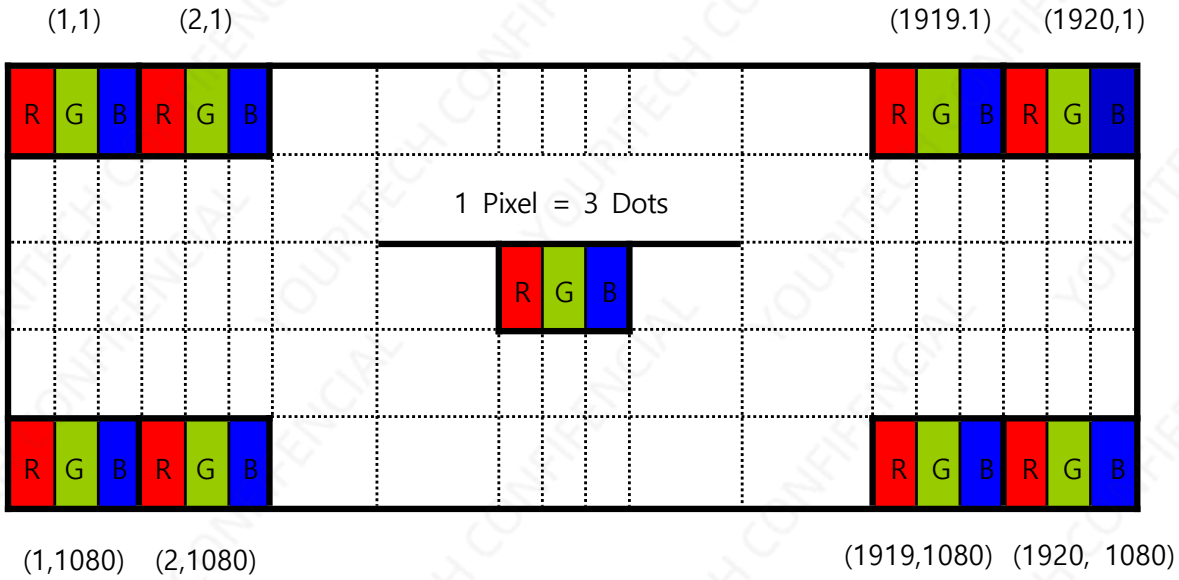
4.0 INTERFACE CONNECTION.

4.0.1 Electrical Interface Connection.

Terminal	Symbol	Functions
Pin No.	Symbol	Description
21	RXO1+	+LVDS differential data input
22	RXO2-	-LVDS differential data input
23	RXO2+	+LVDS differential data input
24	GND	Ground
25	RXOC-	-LVDS differential clock input
26	RXOC+	+LVDS differential clock input
27	GND	Ground
28	RXO3-	-LVDS differential data input
29	RXO3+	+LVDS differential data input
30	RXE0-	-LVDS differential data input
31	RXE0+	+LVDS differential data input
32	RXE1-	-LVDS differential data input
33	RXE1+	+LVDS differential data input
34	GND	Ground
35	RXE2-	-LVDS differential data input
36	RXE2+	+LVDS differential data input
37	RXEC-	-LVDS differential clock input
38	RXEC+	+LVDS differential clock input
39	RXE3-	-LVDS differential data input
40	RXE3+	+LVDS differential data input

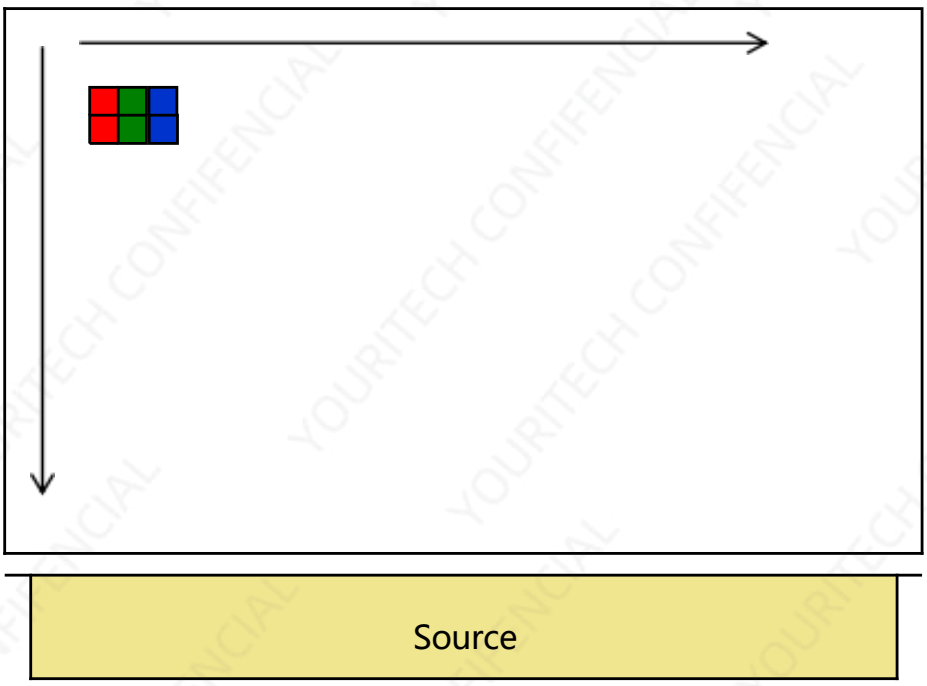
4.2 Data Input Format

Figure 5. Pixel Format



Display Position of Input Data (V-H)

Figure 6. Scan direction



5.0 SIGNAL TIMING SPECIFICATION

5.0.1 The GV156FHB-N10 is operated by the DE only.

Item		Symbols	Min	Typ	Max	Unit
Clock	Frequency	1/Tc	141.8	143.8	145.7	MHz
Frame Period		Tv	1118	1128	1138	lines
			-	60	-	Hz
			-	16.67	-	ms
Vertical Display Period		Tvd	-	1080	-	lines
One line Scanning Period		Th	2114	2124	2134	clocks
Horizontal Display Period		Thd	-	1920	-	clocks

5.02 LVDS Electrical Specification

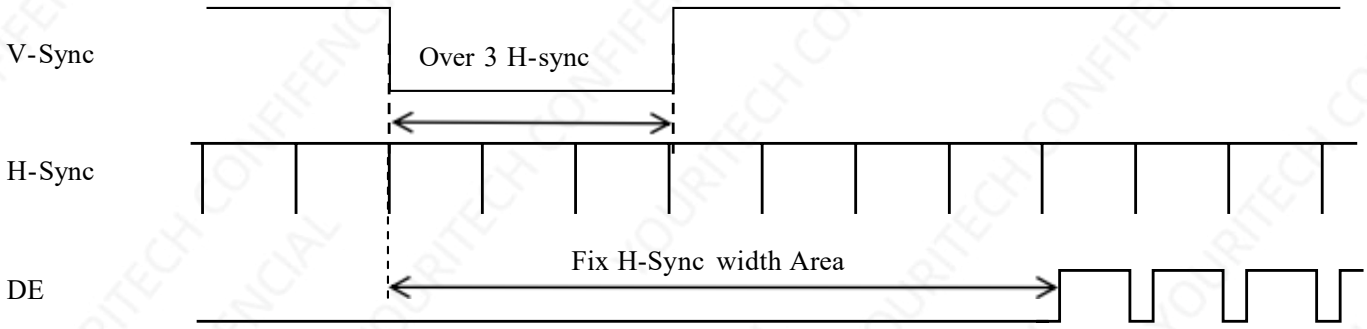
The specification of the LVDS Rx interface timing parameter is shown in Table 4.

<Table 4. LVDS Rx Interface Timing Specification>

Symbol	Symbol	Min	Typ	Max	Unit
Rate	LVDS data rate per pair	400	-	1000	Mbps
Fclk	LVDS input clock frequency	57	-	143	MHz
Vth	Differential input high threshold	-	-	0.1	V
Vtl	Differential input low threshold	-0.1	-	-	V
Vcm	LVDS common mode voltage	0.9	-	1.4	V

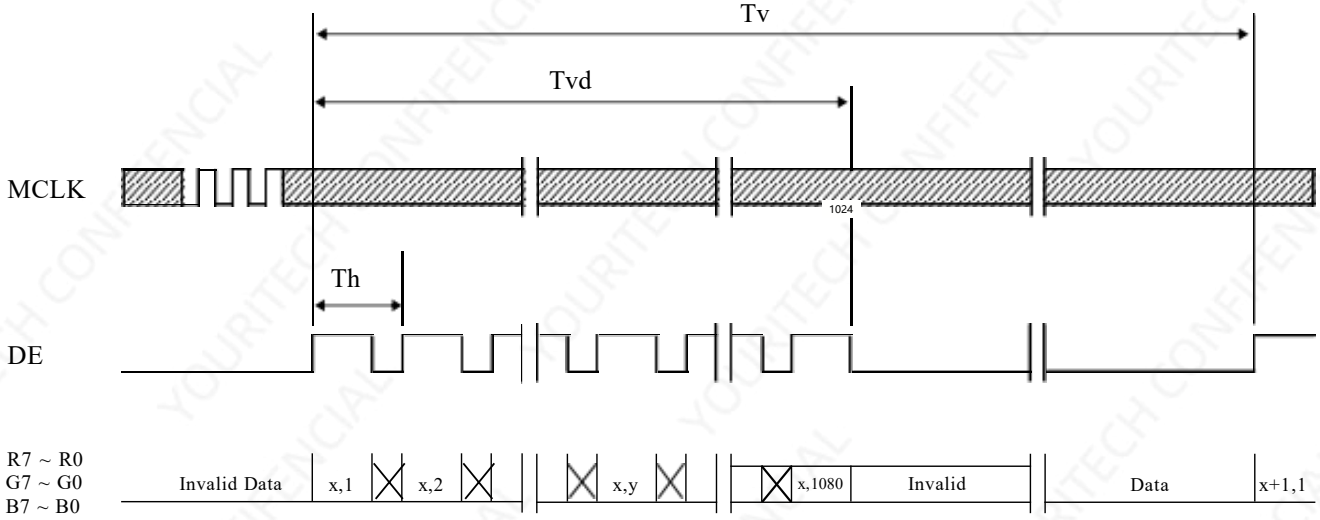
6. SIGNAL TIMING WAVEFORMS OF INTERFACE SIGNAL

6.01 Sync Timing Waveforms

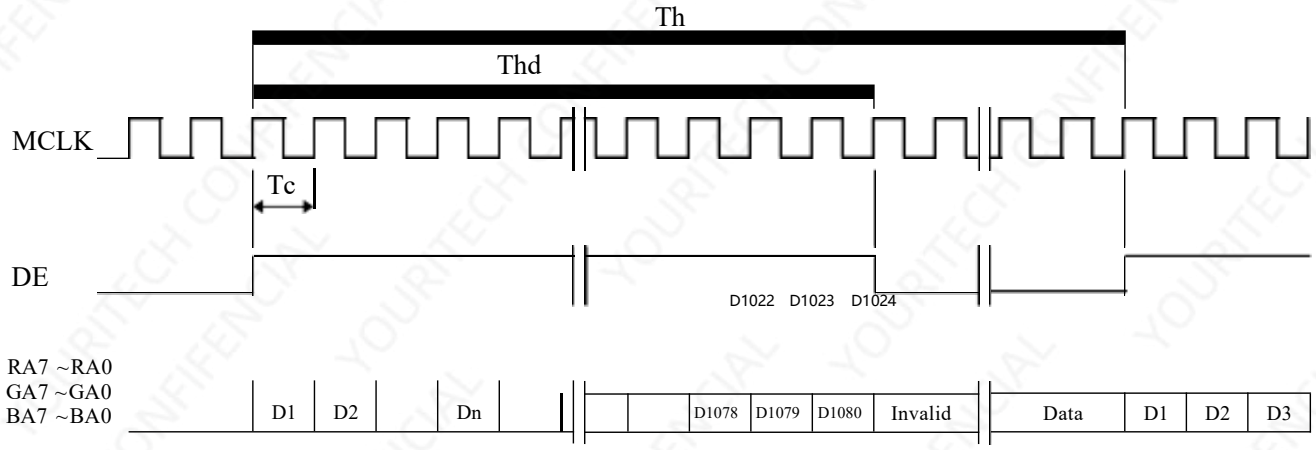


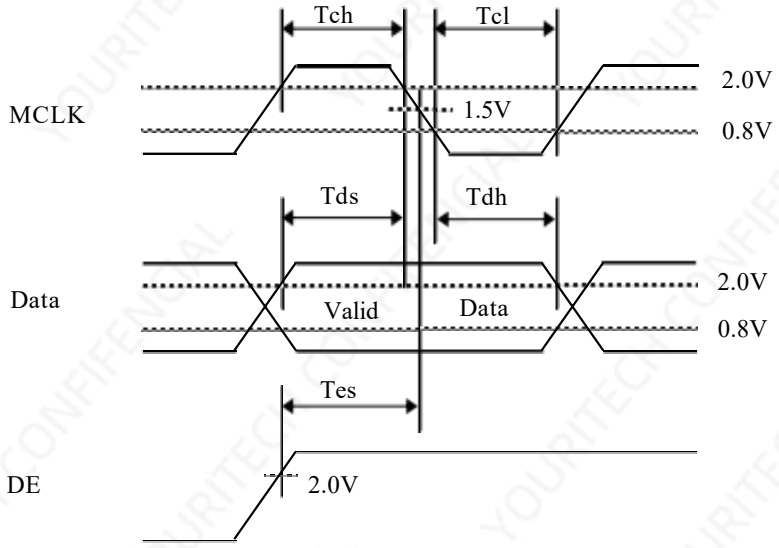
1) Need over 3 H-sync during V-Sync Low
2) Fix H-Sync width from V-Sync falling edge to first rising edge

6.02 Vertical Timing Waveforms



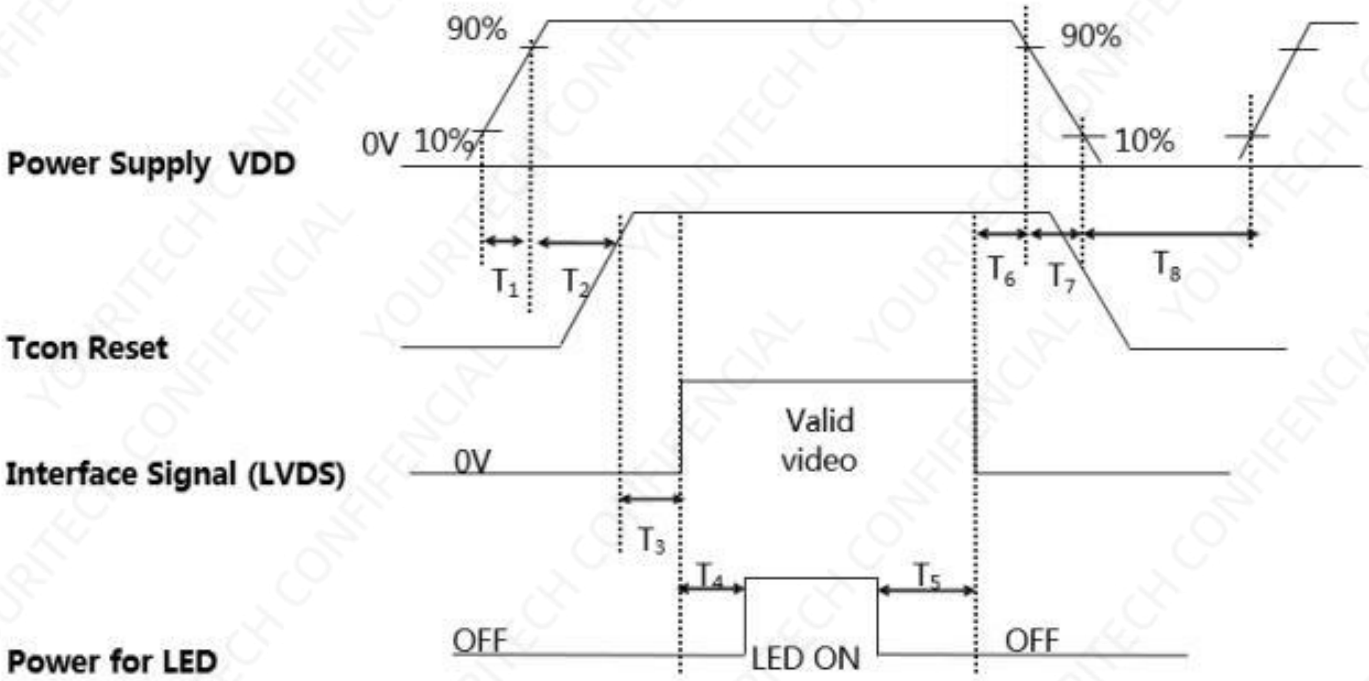
6.03 Horizontal Timing Waveforms





7.0 POWER SEQUENCE

To prevent a latch-up or DC operation of the LCD module, the power on/off sequenceshall be as shown in below



Parameter	Value			Units
	Min.	Typ.	Max.	
T1	0.1	-	8	(ms)
T2	-	8	-	(ms)
T3	0	-	-	(ms)
T4	300	-	-	(ms)
T5	300	-	-	(ms)
T6	0	-	50	(ms)
T7	0	-	10	(ms)
T8	500	-	-	(ms)

8.0 OPTICAL SPECIFICATION

8.0.1 Overview

The test of view angle range shall be measured in a dark room (ambient luminance < 1lux and temperature = 25±2℃) with the equipment of Luminance meter system (Goniometer system and TOPCON CS2000/CA310) and test unit shall be located at an approximate distance 50cm from the LCD surface at a viewing angle of θ and Φ equal to 0。. We refer to θØ=0 (=θ3) as the 3 o'clock direction (the "right"), θ Ø=90 (= θ12) as the 12 o'clock direction ("upward"), θ Ø=180 (= θ9) as the 9 o'clock direction ("left") and θ Ø=270(= θ6) as the 6 o'clock direction ("bottom"). While scanning θ and/or Ø, the center of the measuring spot on the Display surface shall stay fixed. The luminance, color and uniformity (etc) should be tested by CS2000/CA310. The backlight should be operating for 10 minutes prior to measurement. VDD shall be 3.3 : 0.3V at 25。C. Optimum viewing angle direction is 6 'clock

<Table 5. Optical Specifications>

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Angle range	Horizontal	Θ_3	CR > 10	85	89	-	Deg.	Note 1
		Θ_9		85	89	-	Deg.	
	Vertical	Θ_{12}		85	89	-	Deg.	
		Θ_6		85	89	-	Deg.	
Luminance Contrast ratio		CR	Θ = 0。	1000	1200	-		Note 2
Luminance (AA Center)		L		-	2000		cd/m²	
Luminance uniformity 13pt		Yu		68	74		%	
Color Gamut	sRGB	CIE1931	Θ = 0。	76	81	-	%	Only CF@C Light
Reproduction of color	White	Wx	Θ = 0。	Typ -0.04	0.345	Typ +0.04		
		Wy			0.355			
Response Time		Tr+Td	Ta= 25。C Θ = 0。	-	30	35	ms	Note 6

Notes：1. Viewing angle is the angle at which the contrast ratio is greater than 10. The viewing angles are determined for the horizontal or 3, 9 o'clock direction and the vertical or 6, 12 o'clock direction with respect to the optical axis which is normal to the LCD surface (see FIGURE 1).

2. Contrast measurements shall be made at viewing angle of Θ= 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 1) Luminance Contrast Ratio (CR) is defined mathematically.

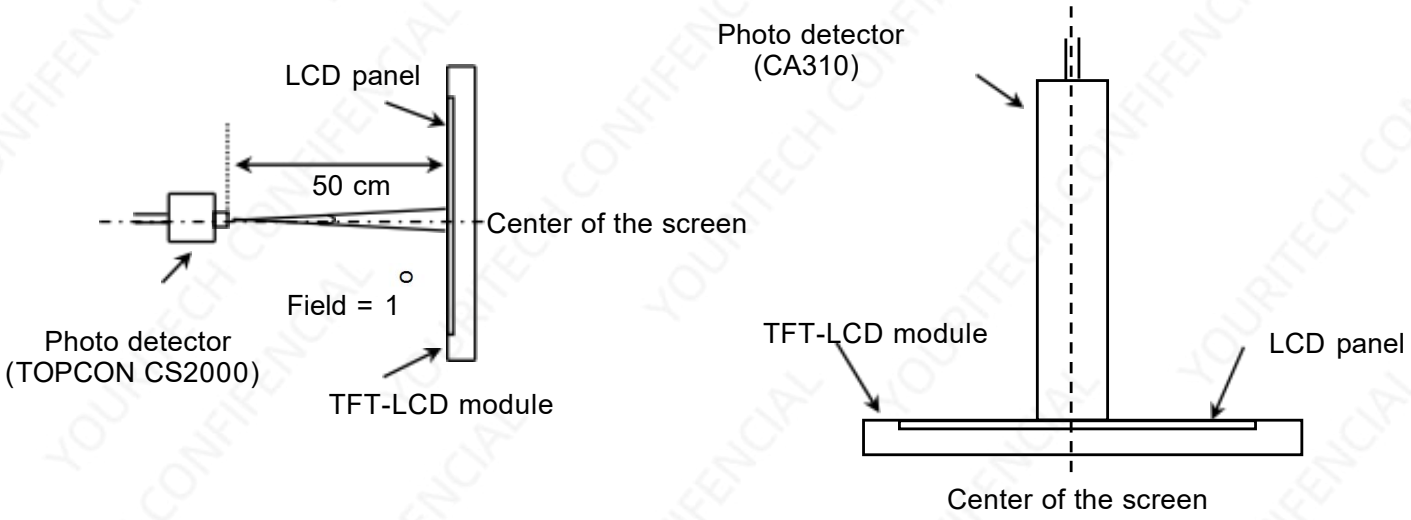
$$CR = \frac{\text{Luminance when displaying a white raster}}{\text{Luminance when displaying a black raster}}$$

3. The color chromaticity coordinates specified in Table 5. shall be calculated from the spectral data measured with all pixels first in red, green, blue and white. Measurements shall be made at the center of the panel.

4. The electro-optical response time measurements shall be made as FIGURE 2 by switching the "data" input signal ON and OFF. The times needed for the luminance to change from 10% to 90% is Tr, and 90% to 10% is Td.

8.0.2 Optical measurements

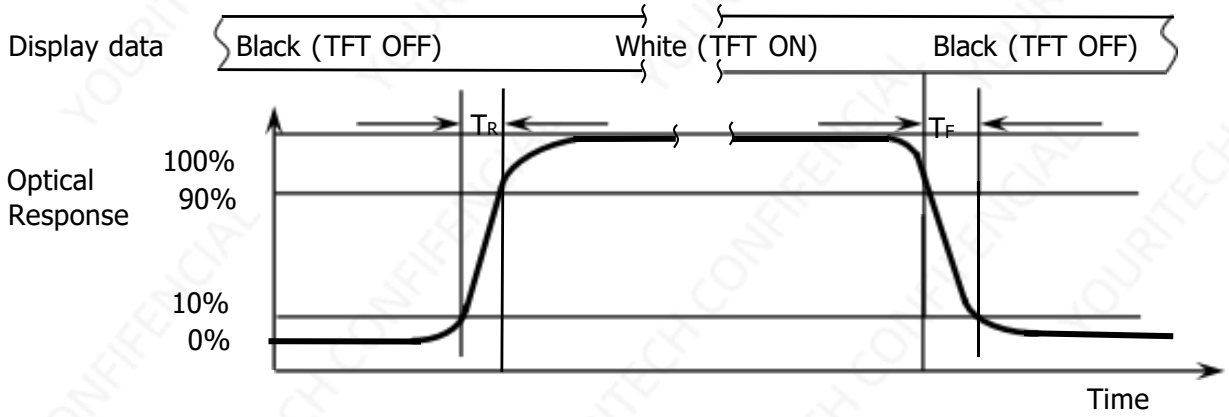
Figure 1. Measurement Set Up



View angel range, uniformity, etc. measurement setup

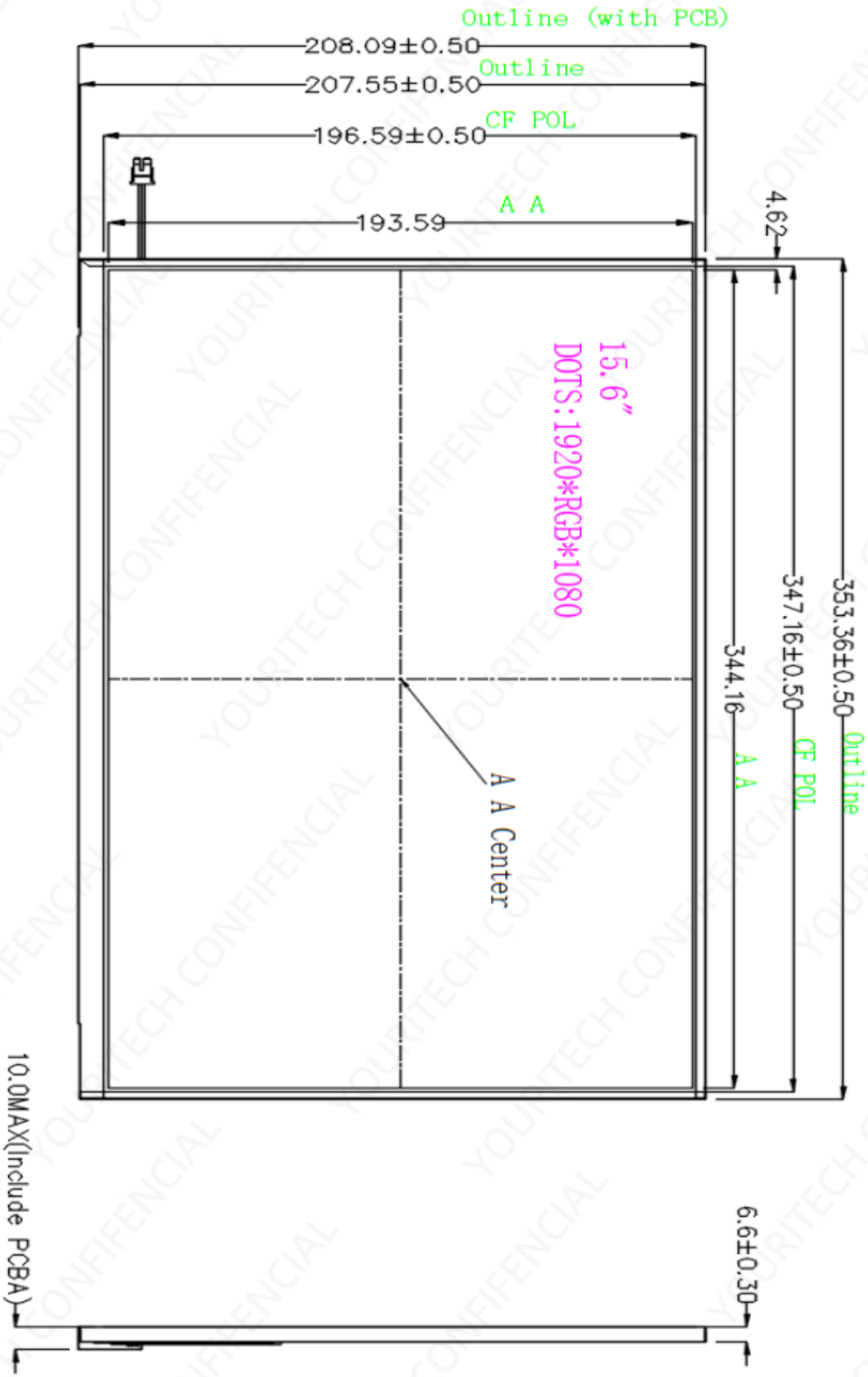
Flicker, measurement setup

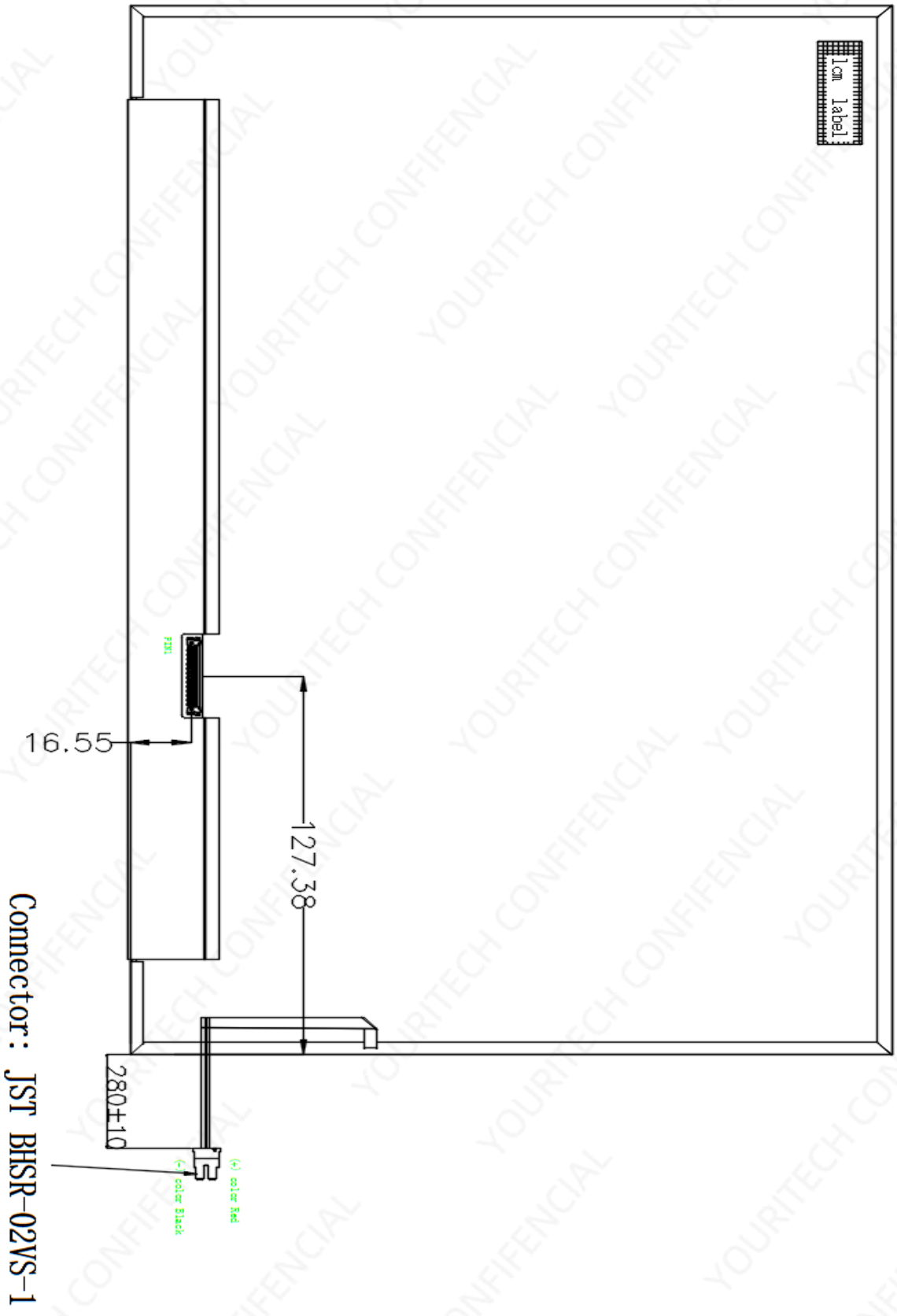
Figure 2. Response Time Testing



The electro-optical response time measurements shall be made as shown in FIGURE 3 by switching the “data” input signal ON and OFF. The times needed for the luminance to change from 10% to 90% is Tr and 90% to 10% is Td.

9.0 MECHANICAL OUTLINE DIMENSION




lcm label
FPC
16.55
127.38
280±10
Connector: JST BHSR-02VS-1
(+) color Red
(-) color Black

10.0 RELIABILITY TEST

The Reliability test items and its conditions are shown in below.

<Table 9. Reliability test>

No	Test Items	Conditions	Remark
1	High temperature storage test	Ta = 80℃, 240 hrs	
2	Low temperature storage test	Ta = -30 ℃, 240 hrs	
3	High temperature operation test	Ta = 80℃, 240 hrs	
4	Low temperature operation test	Ta = -20 ℃, 240 hrs	
5	High temperature & high humidity operation test	Ta = 60 ℃, 90%RH, 240 hrs	
6	Thermal shock	Ta = -30 ℃ ↔ 80℃ (0.5 hr), 100 cycle	Non-operation
7	Image Sticking	5*5 Pattern, 2hrs 25℃ : 2℃, check Pattern Gray 127, after 5 mins, the mura must be disappeared completely	

Note：After the reliability test, the product only guarantee function normally without any fatal defect (non-display, line defect, abormal display etc). All the cosmetic specification is judged before the reliablity test.