HIGHNESS™

One of a kind

HM101WX201B

10.1" Color TFT-LCD

Release Date
31st Oct 2025

HIGHNESS MICROELECTRONICS LTD.

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1. General Specification

Parameter	Specification 15inch	Unit
Active area	216.96 (H) × 135.6(V)	mm
Number of pixels	1280(H) × 800(V)	Pixels
Pixel pitch	0.1695(H) × 0.1695 (V)	mm
Pixel arrangement	RGB Vertical stripe	
Display colors	16.7M (8bit)	Colors
Display mode	Normally Black	
Dimensional outline	228.2±0.3(H) x 148.85±0.3(V) x 2.8max/4.9(max.)	mm
Weight	TBD	g
Surface treatment	Hard Coating，3H	
Back-light	Edge side, 1-LED Lighting Bar Type	

2. Absolute Maximum Ratings

The following 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.

[Ta =25±2℃]

Parameter	Symbol	Min.	Max.	Unit	Remarks
LCD Power Supply Voltage	VDD	3.0	3.6	V	
LED Driver Power Supply Voltage	V_{LED}	5	24	V	Ta = 25℃ Note 1&2
Operating Temperature	T_{OP}	-20	70	℃	Environmental Temperature
Storage Temperature	T_{ST}	-30	80	℃	
Operating Ambient Humidity	Hop	10	90	%RH	
Storage Humidity	Hst	10	90	%RH	
Heat Release Requirement	Trls	15		℃	Note3

Note:
1. The above range 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. MFG. not responsible for product problems beyond the use conditions.
3. When the ambient temperature is T ℃, the surface temperature of Panel cannot exceed (T+15) ℃.

3. Electrical Specifications

3.1 TFT LCD Module

[Ta =25 ± 2 ℃]

Parameter	Symbol	Values			Unit	Notes
		Min	Typ	Max		
Power Supply Input Voltage	V_{DD}	3.3	3.3	3.6	V	Note 1
Power Supply Current	I_{DD}	TBD	TBD	TBD	mA	
LED Driver Power Supply Voltage	V_{LED}	10.8	12	13.2	V	Note 2
LED Driver Power Supply Current	I_{LED}	TBD	TBD	TBD	mA	
LED Power Consumption	P_{LED}	TBD	TBD	TBD	W	
Positive-going Input Threshold Voltage	V_{IT+}	-	-	+100	mV	
Negative-going Input Threshold Voltage	V_{IT-}	-100	-	-	mV	
Differential input common mode voltage	V_{com}	0.6	1.2	1.4	V	

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 ℃
Max value at XXX Pattern

2. Calculated value for reference $I_{LED} \times V_{LED} \div 0.85 = P_{LED}$

3.2 Back-light Driving Unit

Ta=25+/-2°C

Parameter			Min.	Typ.	Max.	Unit	Remarks
Power supply voltage for LED Driver		V_{LED}	-	21	23.1	V	
Power supply Current for Back light		I_{LED}	-	120	-	mA	
Power supply for Back light		P_{LED}	-	2.52	2.8	W	
EN Control Level	Backlight on	V_{ENH}	1.2	-	-	V	EN logic high voltage
	Backlight off	V_{ENL}	-	-	0.6	V	EN logic low voltage
PWM Control Level	PWM High Level	V_{PML}	1.2	-	-	V	
	PWM Low Level	V_{PML}	-	-	0.6	V	
PWM Control Frequency		F_{PWM}	0.2	-	25	KHz	
Duty Ratio		-	5	-	100	%	

4. Interface Connection.

4.1 Electrical Interface Connection

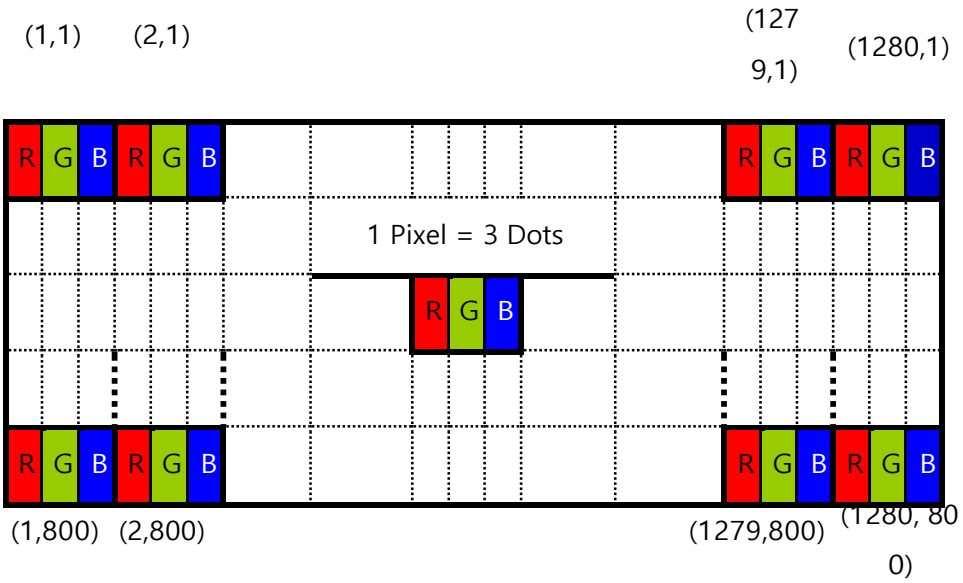
The electronics interface connector is 20455-040E-12.
The connector interface pin assignments are listed in Table.

Terminal	Symbol	Functions
Pin No.	Symbol	Description
1	NC	No Connection
2	VDDIN	Power Supply,3.3V(typical)
3	VDDIN	Power Supply,3.3V(typical)
4	VDC	EDID,3.3V(typical)
5	NC	No Connection
6	CLK_EDID	EDID
7	Data_EDID	EDID data
8	RIN0-	-LVDS differential data lane0 input
9	RIN0+	+LVDS differential data lane0 input
10	GND	Ground
11	RIN1-	-LVDS differential data lane1 input
12	RIN1+	+LVDS differential data lane1 input
13	GND	Ground
14	RIN2-	-LVDS differential data lane2 input
15	RIN2+	+LVDS differential data lane2 input
16	GND	Ground
17	LVDS_CLK-	-LVDS differential clock input
18	LVDS_CLK+	+LVDS differential clock input
19	GND	Ground
20	RIN3-	-LVDS differential data lane3 input
21	RIN3+	+LVDS differential data lane3 input
22	NC	No Connection

Terminal	**Symbol**	**Functions**
Pin No.	Symbol	Description
23	NC(SPI_CSB)	No Connection（SPI）
24	NC(SPI_SCL)	No Connection（SPI）
25	GND	Ground
26	NC(SPI_SDAO)	No Connection（SPI Data output）
27	NC(SPI_SDAI)	No Connection（SPI Data input）
28	GND	Ground
29	NC	No Connection
30	NC	No Connection
31	LED_GND	Ground
32	LED_GND	Ground
33	LED_GND	Ground
34	NC	No Connection
35	LED_PWM	LED Driver PWM dimming control pin
36	LED_EN	LED Driver Chip Enable pin (Active High)
37	NC	No Connection
38	VLED	LED Driver Power supply input
39	VLED	LED Driver Power supply input
40	VLED	LED Driver Power supply input

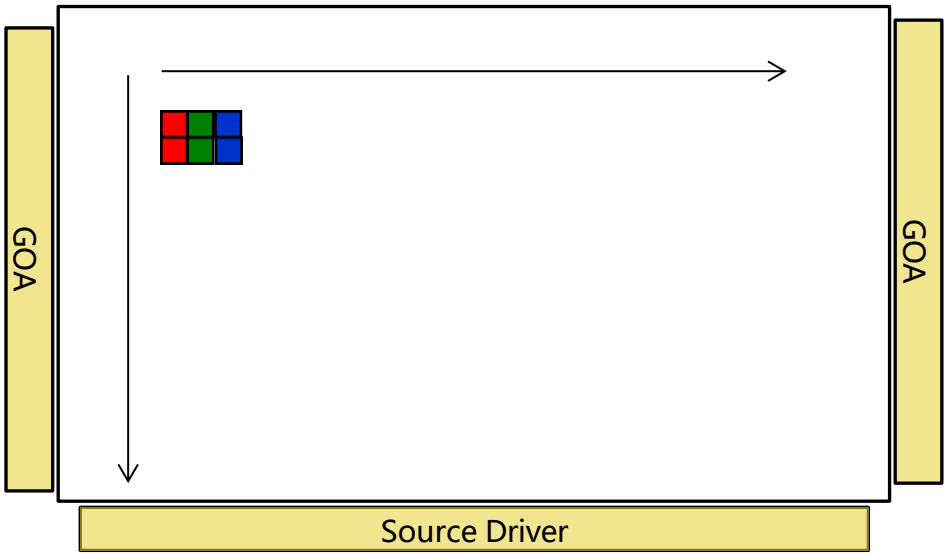
4.2 Data Input Format

Figure Pixel Format



Display Position of Input Data (V-H)

Figure Scan direction



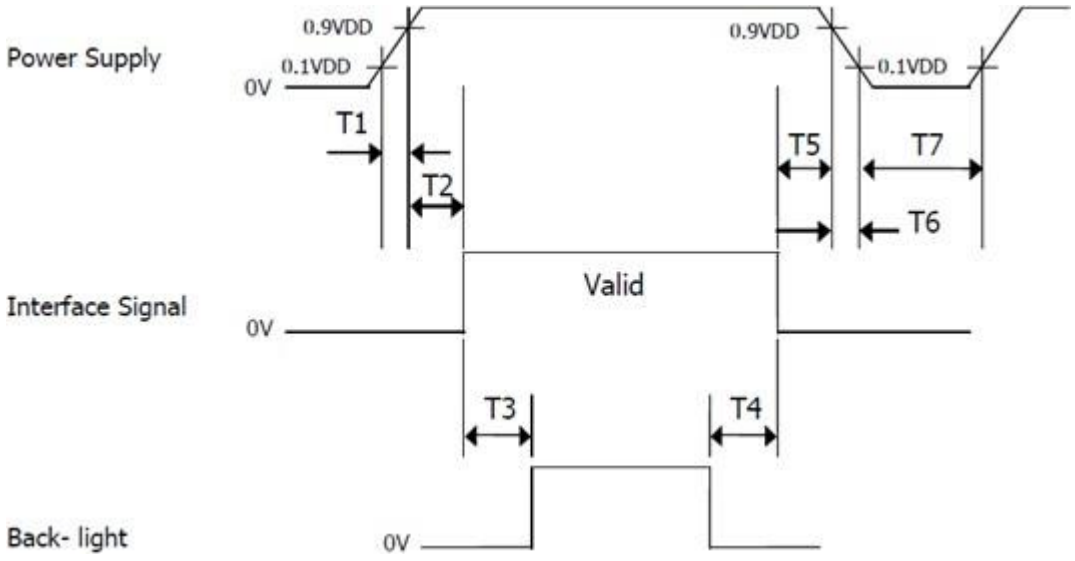
5. Signal Timing Specification

5.1 The operated by the DE only.

Item	Symbols		Min	Typ	Max	Unit	Note
DCLK	Frequency	-	-	75.3	-	MHz	
Hsync	Period	tHP	-	1490	-	tCLK	
	Horizontal Valid	tHV	-	1280	-	tCLK	
	Horizontal Blank	tHB	-	210	-	tCLK	
Vsync	Period	tVP	-	842	-	tHP	
	Vertical Valid	tVV	-	800	-	tHP	
	Vertical Blank	tVB	-	42	-	tHP	
	Frequency	fV	-	60	-	Hz	

6. Power Sequence

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



Parameter	Values			Units
	Min	Typ	Max	
T1	0.5	-	10	ms
T2	0	-	50	ms
T3	200	-	-	ms
T4	500	-	-	ms
T5	0	-	50	ms
T6	0	-	10	ms
T7	500	-	-	ms

Notes:

1. When the power supply VDD is 0V, keep the level of input signals on the low or keep high impedance.
2. Do not keep the interface signal high impedance when power is on. Back Light must be turn on after power for logic and interface signal are valid.

7. Optical Specification

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Angle range	Horizontal	Θ_3	CR > 10	80	85	-	Deg.	Note 1
		Θ_9		80	85	-	Deg.	
	Vertical	Θ_{12}		80	85	-	Deg.	
		Θ_6		80	85	-	Deg.	
Luminance Contrast ratio		CR	Θ = 0°	900	1300	-		Note 2
Luminance of White	Center	Y_w	Θ = 0°	425	500	-	cd/m^2	Note 3 （MDL）
White Luminance uniformity	9 Points or 5 Points	ΔY9 or ΔY5		75	80	-	%	Note 4 （MDL）
Color Gamut	NTSC	CIE1931	Θ = 0°	40	45	-	%	Note 5
Reproduction of color	White	Wx	Θ = 0°	Typ -0.03	0.313	Typ +0.03		
		Wy			0.329			
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.

1. 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. Luminance Contrast Ratio (CR) is defined mathematically.

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

2. Luminance of white is defined as luminance values of center of the LCD surface. Luminance shall be measured with all pixels in the view field set first to white. This measurement shall be taken at the locations shown in for a total of the measurements per display. The luminance is measured by CS2000/CA310 when the LED current is set at 60mA.

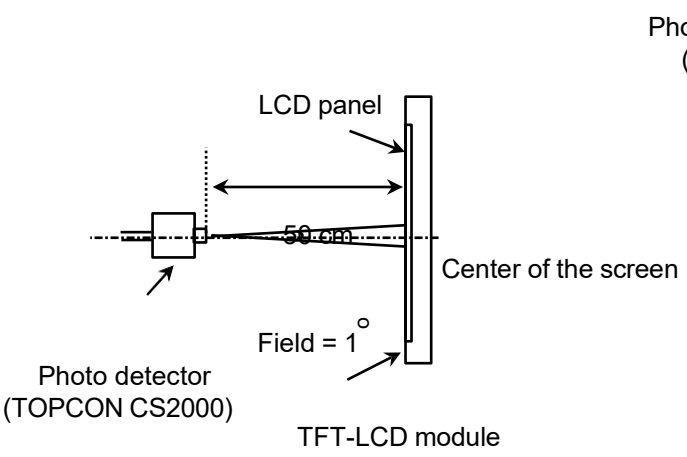
3. The White luminance uniformity on LCD surface is then expressed as : ΔY = Minimum Luminance of 9 Points or 5 points / Maximum Luminance of 9 Points or 5 points.

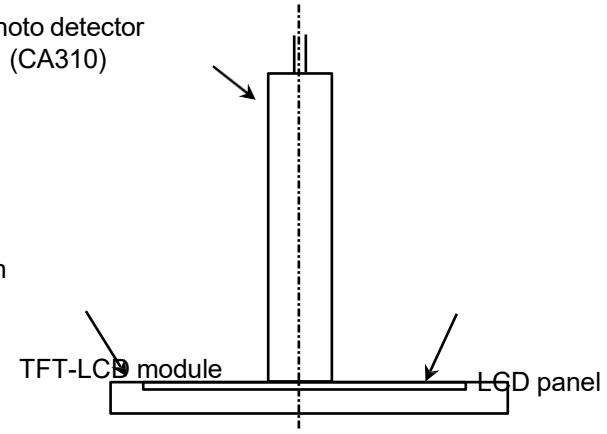
4. The color chromaticity coordinates specified in Table. shall be calculated from the spectral data measured with all pixels first in red, green, blue and white. Measurements shall be made at the center of the panel.

5. The electro-optical response time measurements shall be made as 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.

Optical measurements

Figure Measurement Set Up

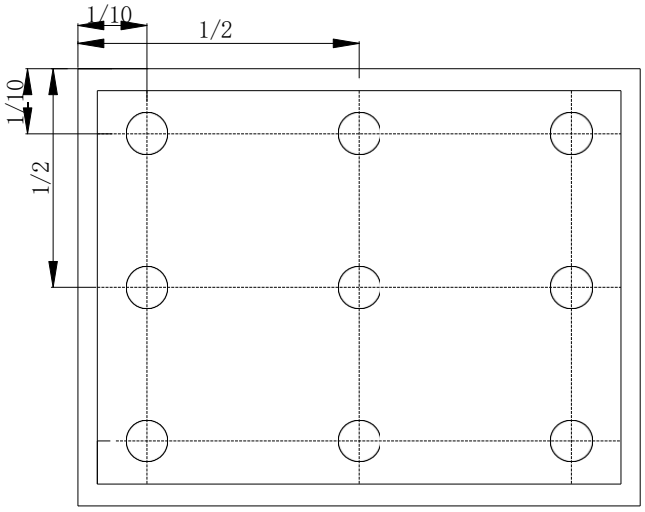




View angel range, uniformity, etc. measurement setup

Flicker, measurement setup

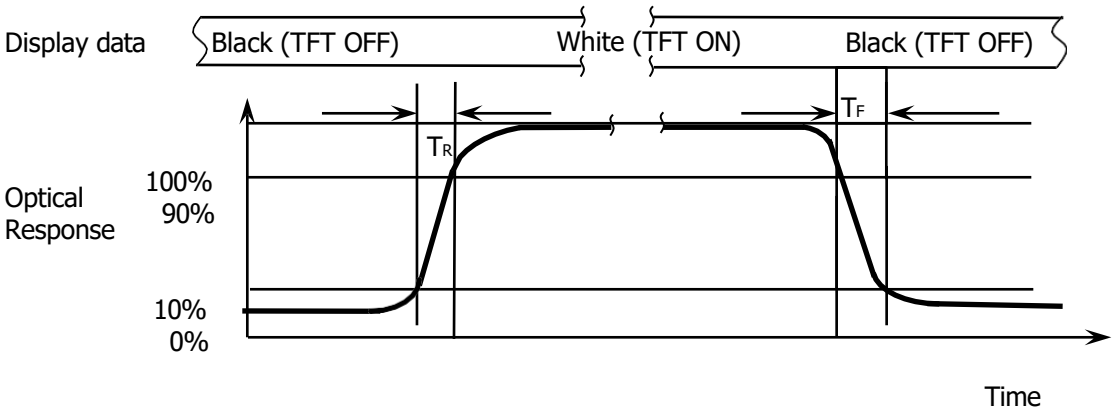
Figure White Luminance and Uniformity Measurement Locations (9 points)



Luminance of white is defined as luminance values of center of the LCD surface. Luminance shall be measured with all pixels in the view field set first to white. This measurement shall be taken at the locations shown in FIGURE for a total of the measurements per display.

The White luminance uniformity on LCD surface is then expressed as : ΔY9 = Minimum Luminance of 9 points / Maximum Luminance of 9points (see FIGURE).

Figure Response Time Testing



The electro-optical response time measurements shall be made as shown in FIGURE 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. Mechanical Outline Dimension

TFT-LCD Module Outline Dimension (Front View)

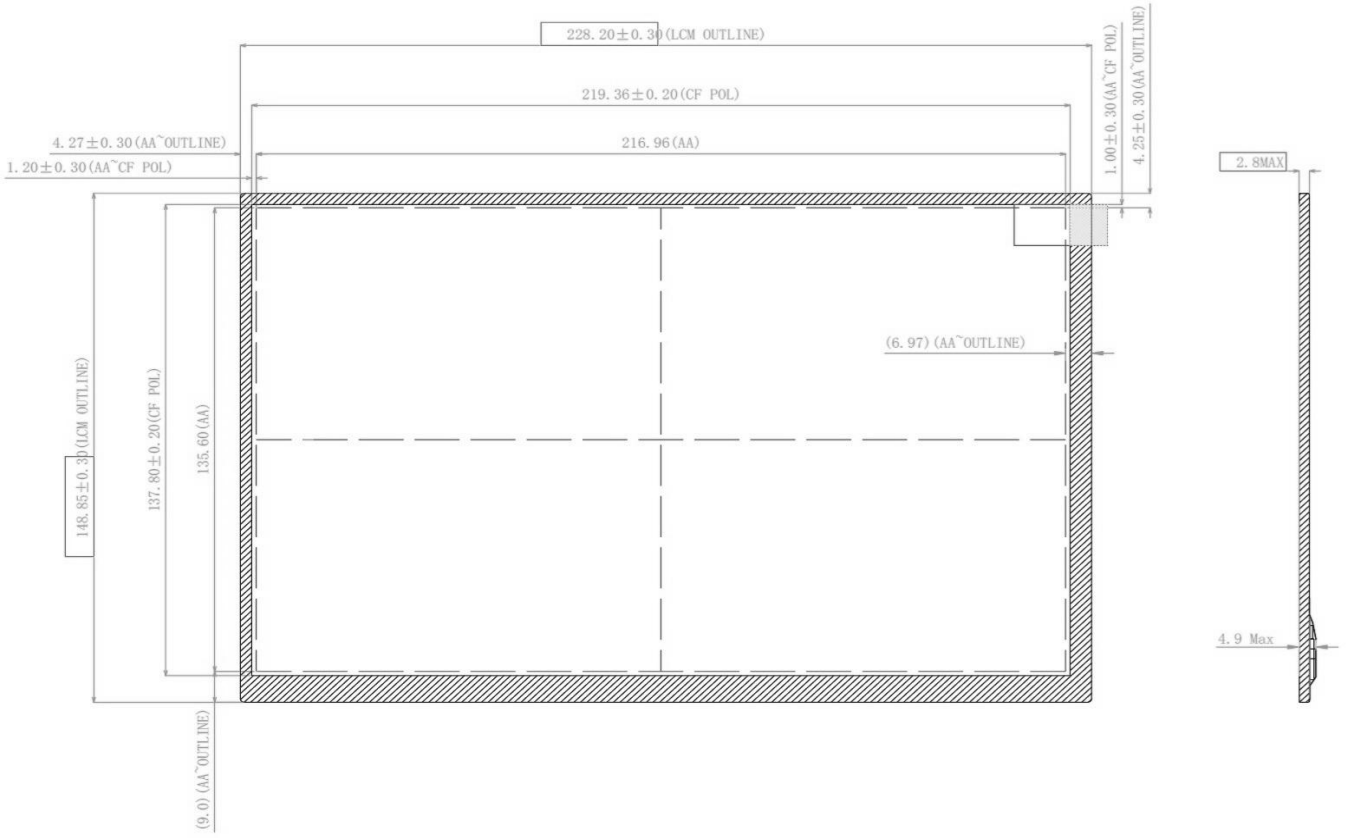
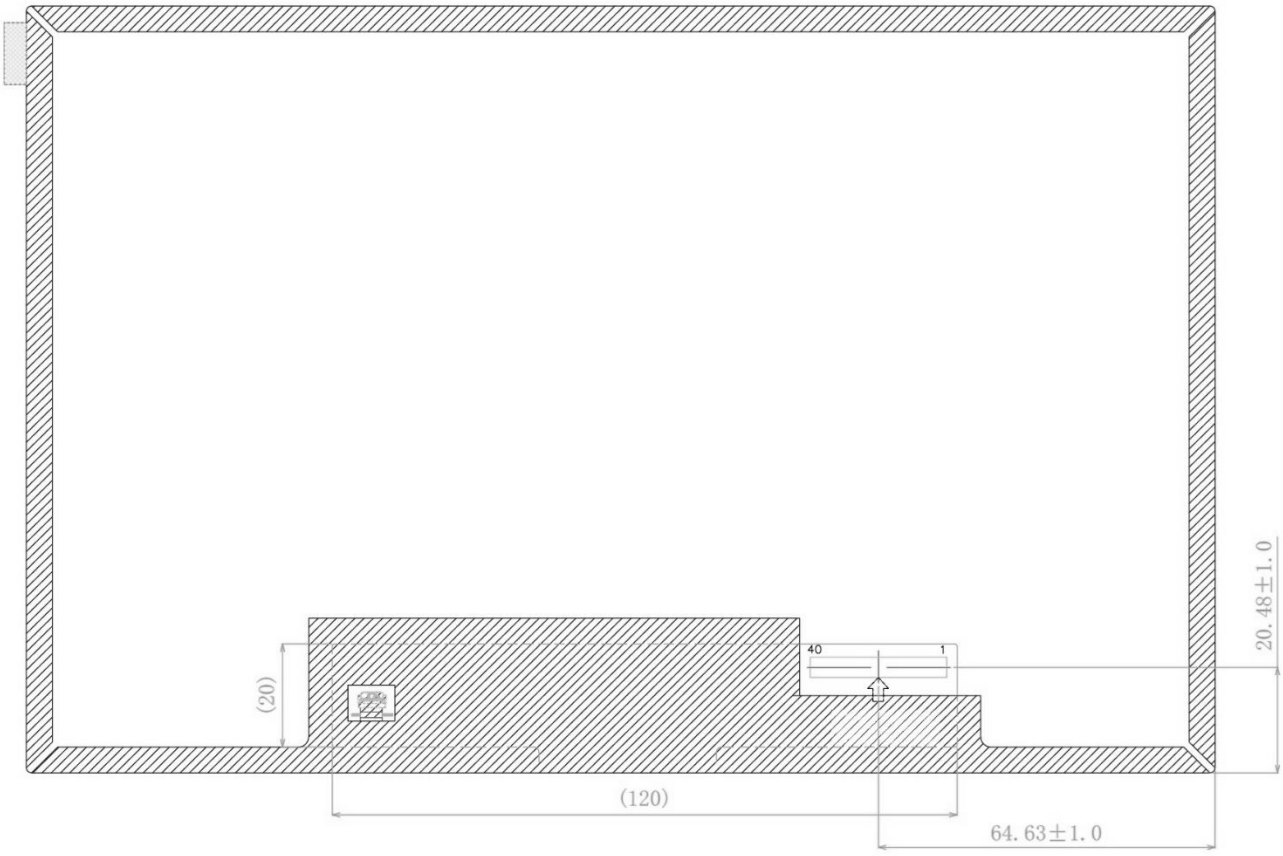


Figure 2. TFT-LCD Module Outline Dimensions (Rear view)



9. Reliability Test

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

No	Test Items	Conditions	Remark
1	High temperature storage test	Ta = 80℃, 300 hrs	
2	Low temperature storage test	Ta = -30 ℃, 300 hrs	
3	High temperature operation test	Ta = 70℃, 300 hrs	
4	Low temperature operation test	Ta = -20 ℃, 300 hrs	
5	High temperature & high humidity storage test	Ta = 40 ℃, 90%RH, 300 hrs	
6	Thermal shock	Ta = -30 ℃ 80℃ (0.5 hr), 20 cycle	Non-operation
7	Image Sticking	5*5 Pattern, 2hrs 25℃±2℃ check pattern Gray 127, after 5 s, the mura must be disappeared completely	
8	ESD test	Air Voltage: ±8KV& ±15KV Contact Voltage: ±8KV R: 330Ω C: 150pF 5 time	

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.