DP-1011-01A Datasheet

1 Introduction

The DP-1011-01A is a 10.1-inch TFT-LCD module featuring a resolution of 1280 × 800 pixels. The module integrates a TFT-LCD panel, driver ICs, flexible printed circuit (FPC), backlight unit, and a capacitive touch panel (CTP).

Powered by HX8288 and HX8695 display drivers, it delivers 16.7 million colors over a single-channel LVDS interface, providing stable and high-speed image transmission. Touch input is handled by the GT928 controller with I²C interface support, enabling smooth and responsive touch functionality. GT928 supports up to 10-point touches.

1.1 Features

- 10.1" TFT-LCD with 1280 × 800 resolution and CTP support
- 16.7M RGB colors for vivid display
- Single-channel LVDS interface for high-speed, dependable data transfer
- Integrated GT928 touch controller with I²C interface providing accurate and low-latency capacitive touch response
- Meets RoHS requirements for environmental compliance

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2 Part Numbers/Ordering Information

Part No.	Description
DP-1011-01A	TFT Display 10.1 inch (1280 x 800 resolution) with Capacitive Touch Panel– Outline 248mm x 165mm

Table 1 - Part Number/Ordering Information

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3 General Specifications

Item	Specification	Unit	Note
LCD Type	TFT	-	
LCD Size	10.1	inch	
Number of Pixels	1280(H)x 800(V)	pixels	
Viewing Direction	All	o'clock	
Interface	Single-channel LVDS		
Display Colors	16.7M Colors (RGB 8 bit)	colors	Note 2
Module Size	248(H) x 165 (V) x 7.1 (D)	mm	Note 3
Active Area	216.96(H) x 135.60(V)	mm	
Brightness	700	cd/m^2	Typical value
Display Driver IC	HX8288*4 & HX8695*1	-	
Touch Panel	Capacitive Touch Panel	-	
Touch Driver IC	GT928	-	
CTP Structure	G + G	-	
CTP Connection Type	FPC		
Operation Temperature	0~50°C	°C	
Storage Temperature	-20~60°C	°C	

Table 2 - General Specifications

Note:

1. Complies with environmental protection requirements and is RoHS compliant.
2. Color tune is slightly changed by temperature and driving voltage.
3. Module size excludes FPC and solder; with CTP.

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4 Hardware Description

The DP-1011-01A features a 10.1-inch TFT-LCD with a 1280 × 800 resolution, integrated with a capacitive touch panel directly bonded to the LCD.

4.1 Pin Assignment

The interface connector pin configurations are described in the following sections.

4.1.1 TFT-LCD Interface Pin Assignment

Pin no	Symbol	Type	Description
1	VCOM	P	Common voltage
2	VDD	P	Power for digital circuit
3	VDD	P	Power for digital circuit
4	NC	-	No Connection
5	NC	-	No Connection
6	NC	-	No Connection
7	GND	P	Ground
8	RXIN0-	I	-LVDS differential data input
9	RXIN0+	I	+LVDS differential data input
10	GND	P	Ground
11	RXIN1-	I	-LVDS differential data input
12	RXIN1+	I	+LVDS differential data input
13	GND	P	Ground
14	RXIN2-	I	-LVDS differential data input
15	RXIN2+	I	+LVDS differential data input
16	GND	P	Ground
17	RXCLKIN-	I	-LVDS differential clock input
18	RXCLKIN+	I	+LVDS differential clock input
19	GND	P	Ground
20	RXIN3-	I	-LVDS differential data input
21	RXIN3+	I	+LVDS differential data input
22	GND	P	Ground
23	NC	-	No Connection
24	NC	-	No Connection
25	GND	P	Ground
26	NC	-	No Connection
27	LED_PWM	O	Blacklight CABC controller signal output
28	NC	-	No Connection
29	AVDD	P	Power for analog circuit
30	GND	P	Ground
31	LED-	P	LED Cathode
32	LED-	P	LED Cathode
33	NC	-	No Connection
34	NC	-	No Connection

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35	VGL	P	Negative power for TFT
36	NC	-	No Connection
37	CABC_EN	I	CABC Enable Input
38	VGH	P	Positive power for TFT
39	LED+	P	LED Anode
40	LED+	P	LED Anode

Table 3 - TFT-LCD Interface Pin Definition

4.1.2 CTP Interface Pin Assignment

I2C Interface Pin Definition, connector: FPC 0.5mm pitch 10pin

Pin no	Name	Type	Description
1	GND	P	Ground
2	GND	P	Ground
3	VDD_CTP	P	3.3V Input power supply
4	VDD_CTP	P	3.3V Input power supply
5	SCL	I/O	I2C serial bus, clock line (3.3V)
6	SDA	I/O	I2C serial bus, data line (3.3V)
7	RES	I	Reset input, active “L” (3.3V)
8	INT	O	Interrupt request to the host (3.3V)
9	GND	P	Ground
10	GND	P	Ground

Table 4 - CTP Interface Pin Definition

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5 Specifications

5.1 Absolute Maximum Ratings

5.1.1 Electrical Absolute Maximum Ratings

Condition: V_{SS}=0V, T_a=25°C

Item	Symbol	MIN.	MAX.	Unit	Note
Power Supply Voltage	VDD	-0.3	3.9	V	Note 1, 2
	VDD_CTP	0.3	3.47	V	
	AVDD	0.5	14.0	V	
	VGH	-0.3	42.0	V	
	VGL	-19.0	0.3	V	

Table 5 - Electrical Absolute Maximum Ratings

Note:

1. Permanent damage to the LCD module may occur if operated beyond the specified limits. Operation beyond the specified electrical characteristics may lead to malfunction or reduced reliability.
2. V_{DD} must always be greater than V_{SS}.
3. Ensure proper grounding when handling the LCD module.

5.1.2 Environmental Absolute Maximum Ratings

Item	Storage		Operating		Note
	MIN.	MAX.	MIN.	MAX.	
Ambient Temperature	-20°C	60°C	0°C	50°C	Note 1, 2
Humidity	-	-	-	-	Note 3

Table 6 - Environmental Absolute Maximum Ratings

Note:

1. Response time decreases at low operating temperatures.
2. Background color may vary slightly with ambient temperature; this phenomenon is reversible.
3. Ta<=40°C: 85%RH MAX
   Ta>=40°C: Absolute humidity must not exceed the equivalent of 85% RH at 40°C.

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5.2 Electrical Specifications

5.2.1 Electrical Characteristics

Condition: V_{SS}=0V, T_a=25°C

Item		Symbol	Min.	Typ.	Max.	Unit	Note
Power Supply		VDD	2.3	2.5	2.7	V	
		VDD_CTP	2.8	3.3	3.47	V	
		AVDD	8.0	8.2	8.4	V	
		VCOM	2.7	3.0	3.3	V	Note 1
		VGH	21.7	22.0	22.3	V	
		VGL	-7.3	-7.0	-6.7	V	
Input Voltage	'H'	V_{IH}	0.8*VDD	-	3.6	V	
	'L'	V_{IL}	0	-	0.2*VDD	V	

Table 7 - Electrical Characteristics

Note:

1. The typical VCOM value is provided for reference only. The actual VCOM must be optimized for each individual LCM. A variable resistor is required to perform this adjustment.

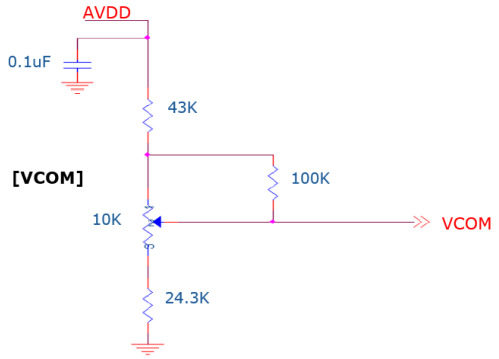

Figure 1 - VCOM reference circuit

5.2.2 Current Consumption

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Current for Driver	I_{GH}	300	705	1000	uA	V_{GH} = 22V
	I_{GL}	300	705	1000	uA	V_{GL} = -7V
	IV_{DD}	50	95	120	mA	V_{DD} = 2.5V
	IAV_{DD}	8	45	70	mA	AV_{DD} = 8.2V

Table 8 - Current Consumption

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5.2.3 LED Backlight Specification

Condition: V_{SS}=0V, T_a=25°C

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Supply Voltage	Vf	16.2	18.0	19.8	V	
Supply Current	If	-	360	-	mA	
Uniformity	Δ Bp	75	80	-	%	
Life Time	time	20K	-	-	hours	Note 1

Table 9 - LED Backlight Specification

Note:

1. Brightness decreases to 50% of its initial value at an ambient temperature of T_a = 25°C.

5.2.4 AC Electrical Characteristics

Item	Symbol	Values			Unit	Note
		Min.	Typ.	Max.		
LVDS Differential Input High Threshold Voltage	R_{xVTH}	-	-	100	mV	R_{xVCM}=1.2V
LVDS Differential Input Low Threshold Voltage	R_{xVTL}	-100	-	-	mV	
LVDS Differential Input Common Mode Voltage	R_{xVCM}	0.7	-	1.6	V	
LVDS Differential Voltage	$\|V_{ID}\|$	200	-	600	mV	

Table 10 - AC Electrical Characteristics

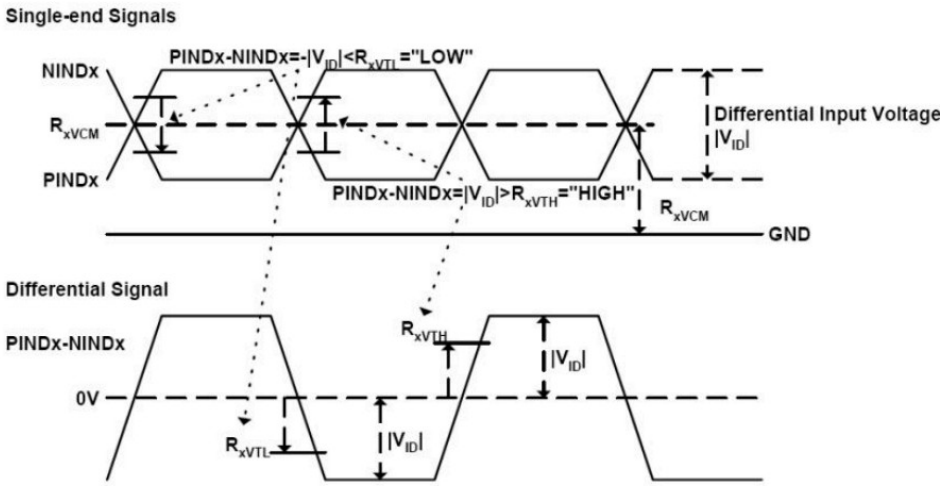

Figure 2 - AC Electrical Characteristics

5.3 Timing

5.3.1 Input Timing Characteristics

Item	Symbol	Values			Unit	Note
		Min.	Typ.	Max.		
Clock Frequency	$1/T_C$	68.9	71.1	73.4	MHz	Frame rate = 60Hz
Horizontal Display Area	t_{HD}		1280		T_C	
HS Period Time	t_H	1410	1440	1470	T_C	
HS Width + Back Porch + Front Porch	$t_{HW} + t_{HBP} + t_{HFP}$	60	160	190	T_C	
Vertical Display Area	t_{VD}		800		t_H	
VS Period Time	t_V	815	823	833	t_H	
VS Width + Back Porch + Front Porch	$t_{VW} + t_{VBP} + t_{VFP}$	15	23	33	t_H	

Table 11 - Input Timing Characteristic

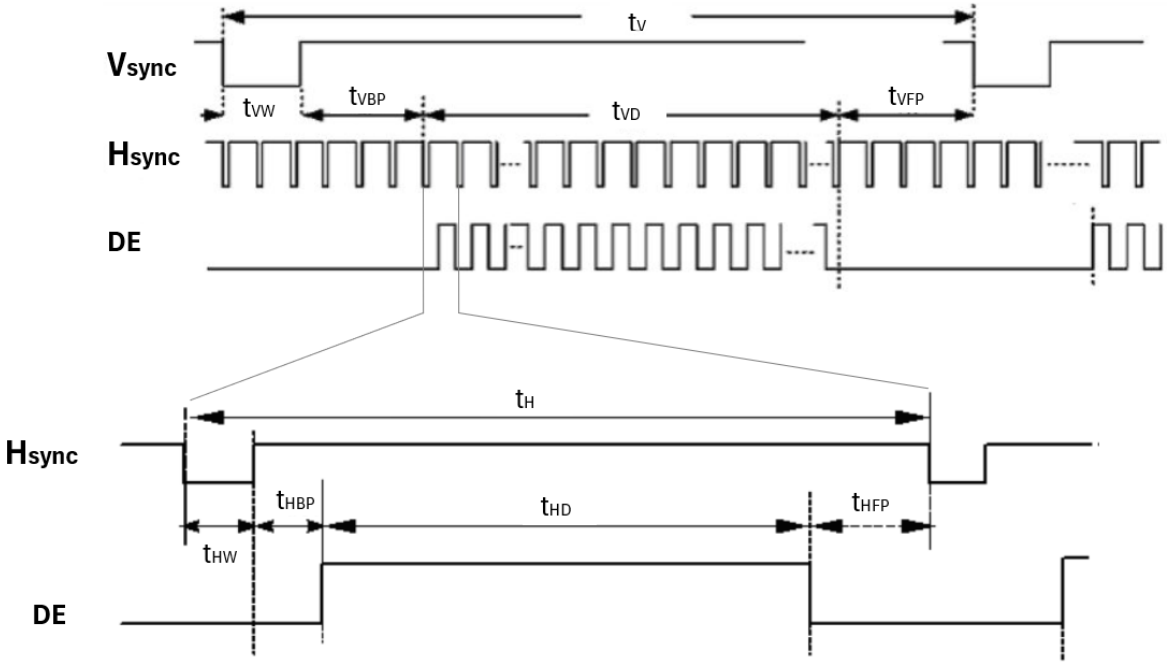

Figure 3 - Input Timing Characteristic

5.3.2 LVDS Data Input Format

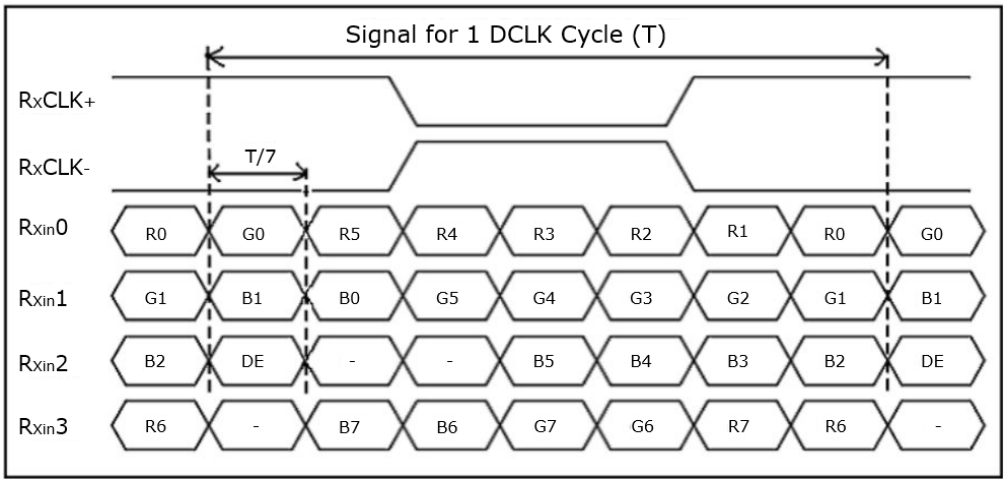

Figure 4 - LVDS Data Input Format

5.4 Power Sequence

5.4.1 Power ON Sequence

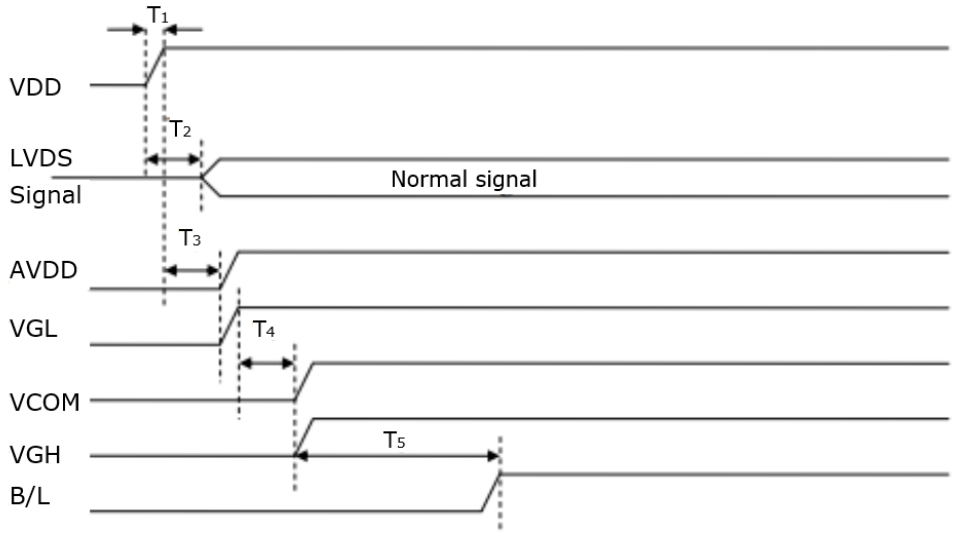

Figure 5 - Power ON Sequence

Symbol	Values			Unit
	Min.	Typ.	Max.	
T_1	0.5	2	10	ms
T_2	0	5	50	ms
T_3	0	5	50	ms
T_4	0	6	100	ms
T_5	120	130	200	ms

Table 12 - Power ON Sequence

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5.4.2 Power OFF Sequence

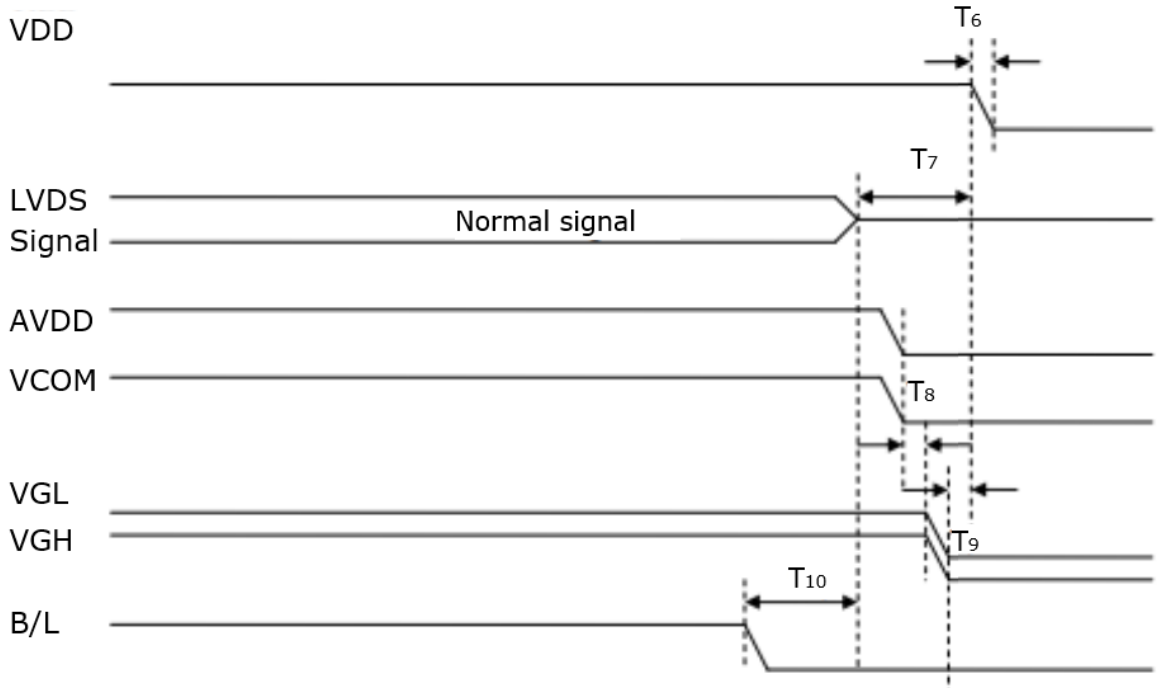

Figure 6 - Power OFF Sequence

Symbol	Values			Unit
	Min.	Typ.	Max.	
T_6	0.5	2	10	ms
T_7	0	7	50	ms
T_8	0	5	10	ms
T_9	0	1	10	ms
T_{10}	0	2	100	ms

Table 13 - Power OFF Sequence

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5.5 Optical Specifications

Item	Symbol		Condition	Min.	Typ.	Max.	Unit	Note
Brightness	Bp		θ=0° Φ=0°	-	700	-	Cd/m^2	Note 1
Uniformity	⊿Bp			70	80	-	%	Note 1 Note 2
Viewing Angle	3:00		Cr≥10	-	80	-	Deg	Note 3
	6:00			-	80	-		
	9:00			-	80	-		
	12:00			-	80	-		
Contrast Ratio	Cr		θ=0° Φ=0°	600	800	-	-	Note 4
Response Time	T_r + T_f			-	25	50	ms	Note 5
Color of CIE Coordinate	W	x	θ=0° Φ=0°	Typ -0.05	0.290	Typ +0.05	-	Note 1 Note 6
		y			0.358		-	
	R	x			0.589		-	
		y			0.323		-	
	G	x			0.330		-	
		y			0.578		-	
	B	x			0.146		-	
		y			0.140		-	
NTSC Ratio	S			40	50	-	%	

Table 14 - Optical Specifications

Remark: ***Parameters may vary slightly depending on temperature, driving voltage, and material.***

Note :

1. Data was measured after the LEDs were turned on for 5 minutes with the LCM displaying full white. Brightness is the average value of 9 measured points. Measurement equipment: PR-705 (Φ8mm)
   Measuring Conditions:
   - Environment: Dark room
   - Temperature: Ta=25°C
   - Operating voltage adjusted for optimum contrast at the center of the display
   - Values measured at the center point of the LCD panel after more than 5 minutes of backlight operation

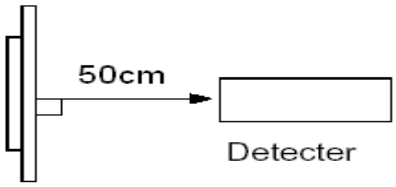

Figure 7 - Measurement Setup

2. The luminance uniformity is calculated using the following formula:

$$\Delta Bp = \frac{\mathbf{Bp\ (Min.)}}{\mathbf{Bp\ (Max.)}} \times 100\%$$

Bp (Max.) = Maximum brightness in 9 measured spots
Bp (Min.) = Minimum brightness in 9 measured spots

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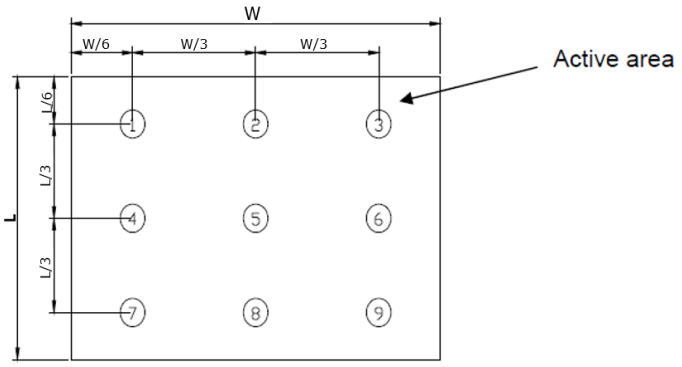

Figure 8 - Measurement Point

3. Definition of viewing angle: Refer to the figure below, indicated by θ and Φ.

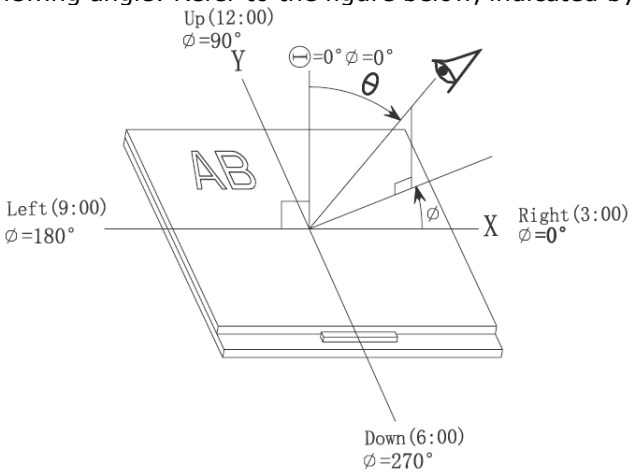

Figure 9 - Viewing Angle

4. Contrast ratio is calculated using the following formula. (Test equipment: DMS501)

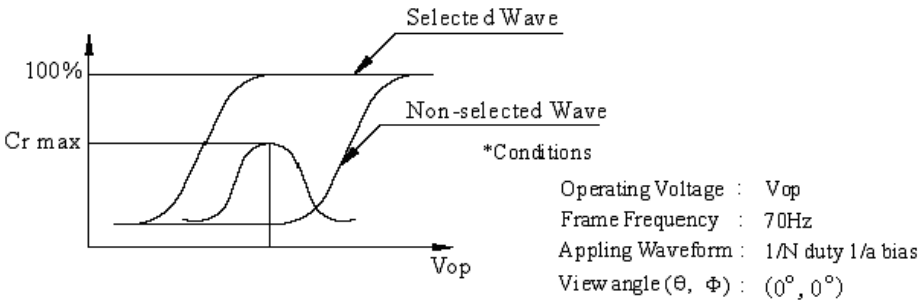

Figure 10 - Contrast Ratio

$$\text{Contrast ratio, Cr} = \frac{\textbf{Brightness of selected dots}}{\textbf{Brightness of non-selected dots}}$$

5. Definition of response time. (Test equipment: DMS501)
The output signals of the photo detector are measured when the input signal changes from "black" to "white" (falling time) and from "white" to "black" (rising time). Response time is defined as the time interval between 10% and 90% of the signal amplitude. Refer to the figure below for illustration.

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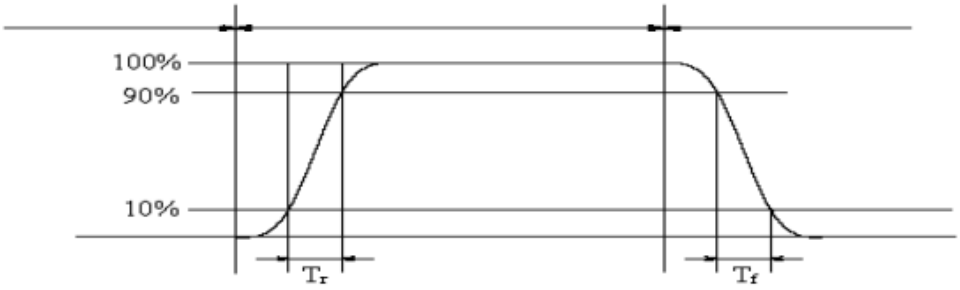

Figure 11 - Definition of Response Time

6. Definition of color in terms of CIE coordinates and NTSC ratio.
   Color gamut:

$$S = \frac{\text{Area of RGB triangle}}{\text{Area of NTSC triangle}} \times 100\%$$

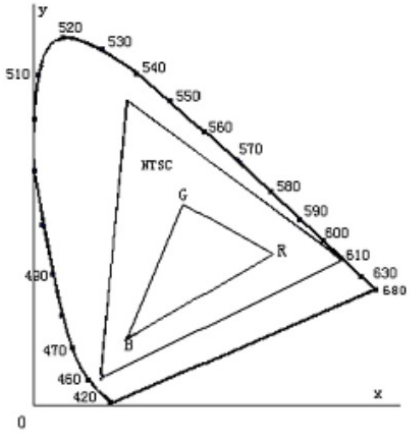

Figure 12 - 1931 CIE Chromaticity Diagram

7. Definition of cross talk.

$$\text{Cross talk ratio}(\%) = \frac{|\text{Pattern A Brightness} - \text{Pattern B Brightness}|}{\text{Pattern A Brightness}} \times 100\%$$

Electric volume value=3F+/-3Hex

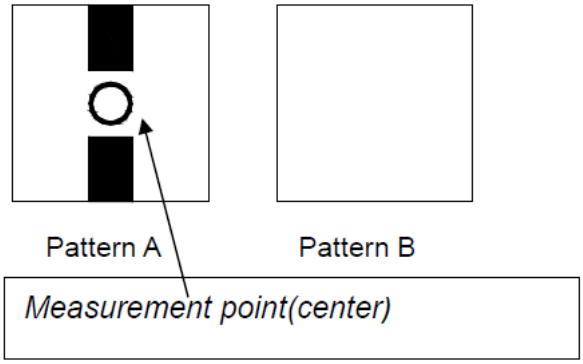

Figure 13 - Definition of Cross Talk

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6 Reliability Test Items

Test Item	Test Conditions	Note
High Temperature Storage	Ta= +60°C 96hrs	Note 1, 3, 4
Low Temperature Storage	Ta= -20°C 96hrs	Note 1, 3, 4
High Temperature Operation	Ta= +50°C 96hrs	Note 2, 3, 4
Low Temperature Operation	Ta= 0°C 96hrs	Note 1, 3, 4
High Temperature and Humidity Storage	Ta= +40°C, 90%RH 96hrs	Note 3, 4
Thermal Shock	0°C /30 min ~ +50°C /30 min for 100 cycles Start with cold temperature End with high temperature	Note 3, 4
Vibration Test	Frequency range: 10~55Hz Stroke: 1.5mm Sweep: 10Hz~55Hz~10Hz 2 hours for each direction of X, Y and Z (6 hours for total)	
Mechanical Shock	100G 6ms, ±X, ±Y and ±Z, 3 times for each direction	
Package Vibration Test	Random vibration: ISTA-3A 1Hz~200Hz, Grms=0.53 Half hours for direction of Z	
Package Drop Test	Height: 60cm 1 corner, 3 edges, 6 surfaces	
Electrostatic Discharge	± 2 kV, Human Body Mode, 100pF/1500Ω	

Table 15 - Reliability Test Items

Note :

1. Ta refers to the ambient temperature of the samples.
2. Ts refers to the temperature of the panel's surface.
3. Under standard conditions, no practical issues are expected that would affect display function. After reliability testing, only operational functionality is guaranteed; cosmetic specifications are not guaranteed.
4. Before performing cosmetic and functional tests, the product must be allowed sufficient recovery time, at least 2 hours at room temperature.

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7 Dimension

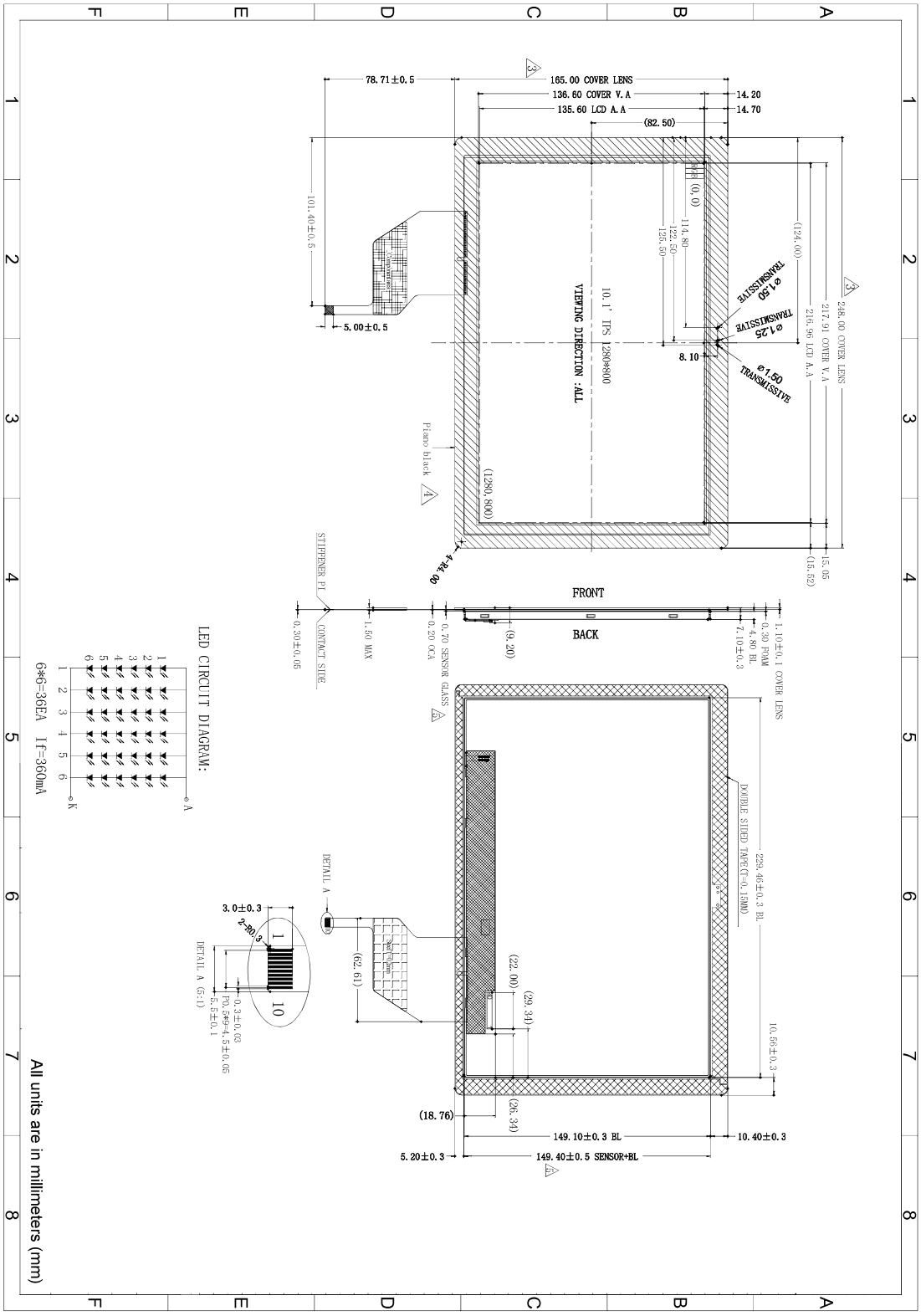

Figure 14 - LCM Dimension

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- The device has been damaged due to human factors, such as dropping, impact, water exposure, or unauthorized disassembly/modification.
- The device has malfunctioned due to improper use, mishandling, or usage beyond its intended design.
- The device has been disassembled, repaired, or modified by unauthorized personnel.
- Any other conditions that do not comply with our warranty policy. For details, please contact our sales team.

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Appendix A – References

Document References

NA

Acronyms and Abbreviations

Terms	Description
CABC	Content Adaptive Backlight Control
CTP	Capacitive Touch Panel
DC	Direct Current
FPC	Flexible Printed Circuit
IC	Integrated Circuit
I2C	Inter-Integrated Circuit
LCD	Liquid Crystal Display
LCM	Liquid Crystal Module
LED	Light Emitting Diode
LEDA	Light Emitting Diode Anode
LEDK	Light Emitting Diode Cathode
LVDS	Low-Voltage Differential Signaling
TFT	Thin Film Transistor

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Appendix C – Revision History

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Revision	Changes	Date
Version 1.0	Initial Release	01-09-2025
Version.1.1	Revised module dimensions in Tables 1 and 2	27-07-2026

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