☐ Tentative Specification
☐ Preliminary Specification
■ Approval Specification

MODEL NO.: G150XJE
SUFFIX: E02

Customer:

APPROVED BY **SIGNATURE**

Name / Title _____ _____
Note

Please return 1 copy for your confirmation with your signature and comments.

Approved By	Checked By	Prepared By
陳立錚	林秋森	吳承旻

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REVISION HISTORY

Version	Date	Page	Description
Ver. 2.0	11 Jun 2020	All	Approval Specification was first issued.
Ver 2.1	20 Jan 2021	4	Modified Module Power Consumption note from Max. to Typ..
		6	Added more description about note(1) ~ (2).
		11	Modified Converter Power Supply Current Value.
		17	Modified Timing Specification t_B Max. Value.
		21	Added more description about note(1) ~ (5).
		25	Added 8.2 section about Storage Precautions.

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1. GENERAL DESCRIPTION

1.1 OVERVIEW

G150XJE-E02 is a 15.0” TFT Liquid Crystal Display IAV module with LED Backlight units and 30 pins eDP interface. This module supports 1024 x 768 XGA mode and can display 16.7M/262k colors.

The PSWG is to establish a set of displays with standard mechanical dimensions and select electrical interface requirements for an industry standard 15.0” XGA LCD panel and the LED driving device for Backlight is built in PCBA.

1.2 FEATURE

- XGA (1024 x 768 pixels) resolution
- PSWG (Panel Standardization Working Group)
- Wide operating temperature.
- RoHS compliance

1.3 APPLICATION

-TFT LCD Monitor

- Factory Application
- Amusement

1.4 GENERAL SPECIFICATI0NS

Item	Specification	Unit	Note
Active Area	304.1 (H) x 228.1(V) (15.0” diagonal)	mm	(1)
Bezel Opening Area	307.4(H) x 231.3(V)	mm	
Driver Element	a-Si TFT active matrix	-	-
Pixel Number	1024 x R.G.B x 768	pixel	-
Pixel Pitch	0.297(H) x 0.297(W)	mm	-
Pixel Arrangement	RGB vertical Stripe	-	-
Display Colors	16,777,216 / 262,144	color	-
Display Mode	Normally Black	-	-
Surface Treatment	Hard Coating (3H), Anti-Glare	-	-
Module Power Consumption	11.45W	W	Typ.

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1.5 MECHANICAL SPECIFICATIONS

Item		Min.	Typ.	Max.	Unit	Note
Module Size	Horizontal(H)	326.0	326.5	327.0	mm	(1)
	Vertical(V)	253.0	253.5	254.0	mm	
	Depth(D)	6.0	6.5	7.0	mm	(1)(2)
Bezel Area	Horizontal	307.1	307.4	307.7	mm	-
	Vertical	231.0	231.3	231.6	mm	
Active Area	Horizontal	-	304.1	-	mm	
	Vertical	-	228.1	-	mm	
Weight		-	650	680	g	

Note (1)Please refer to the attached drawings for more information of front and back outline dimensions.

Note (2) The depth is without connector.

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2. ABSOLUTE MAXIMUM RATINGS

2.1 ABSOLUTE RATINGS OF ENVIRONMENT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Operating Ambient Temperature	TOP	0	+60	℃	(1)(2)(3)
Storage Temperature	TST	-20	+60	℃	(1)(2)(3)

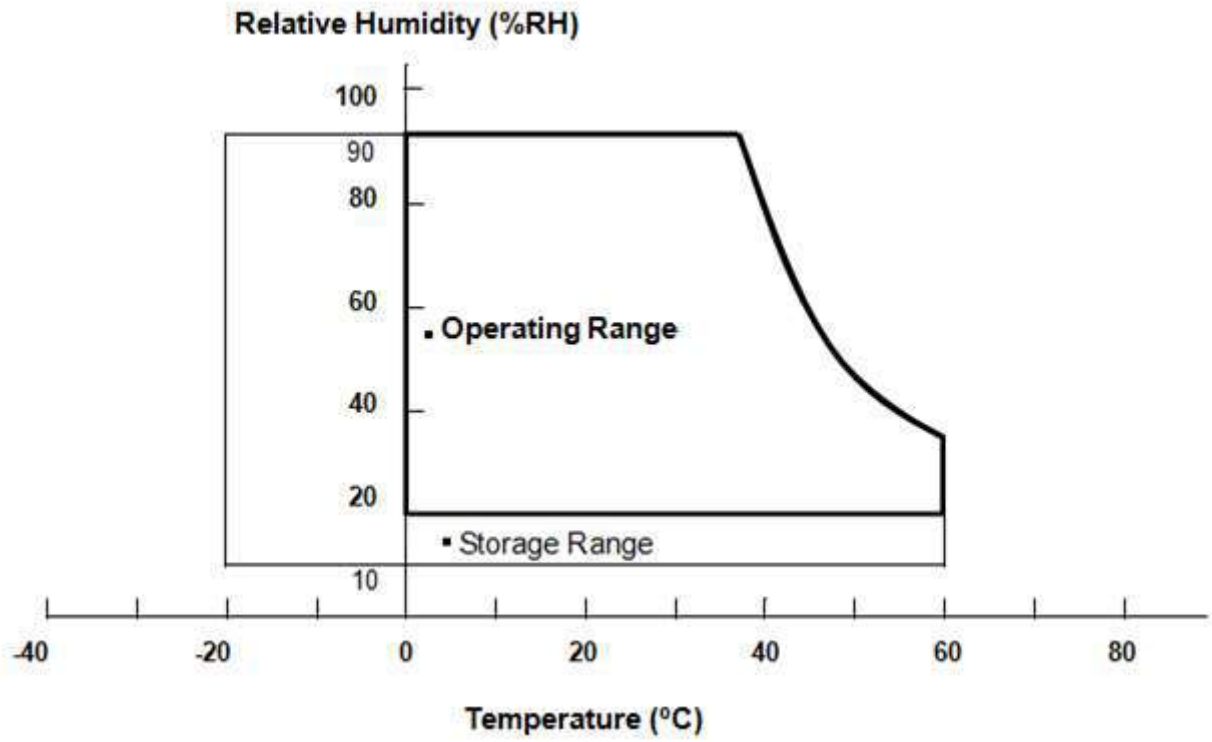
Note (1)

(a) 90 %RH Max.

(b) Wet-bulb temperature should be 39 ºC Max.

(c) No condensation.

Note (2) Panel surface temperature should be 0℃ min. and 65℃ max under Vcc=5.0V, fr =60Hz, typical LED string current, 25℃ ambient temperature, and no humidity control . Any condition of ambient operating temperature ,the surface of active area should be keeping not higher than 65℃.



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2.2 ELECTRICAL ABSOLUTE RATINGS

2.2.1 TFT LCD MODULE

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Power Supply Voltage	VCC	-0.3	4	V	(1)
Logic Input Voltage	V_{IN}	-0.3	4	V	

2.2.2 BACKLIGHT UNIT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Converter Voltage	V_i	-0.3	18	V	(1) , (2)
Enable Voltage	EN	---	5.5	V	
Backlight Adjust	Dimming	---	5.5	V	

Note (1)Permanent damage to the device may occur if maximum values are exceeded. Function operation should be restricted to the conditions described under Normal Operating Conditions.

Note (2)Specified values are for lamp (Refer to 3.3.2 for further information).

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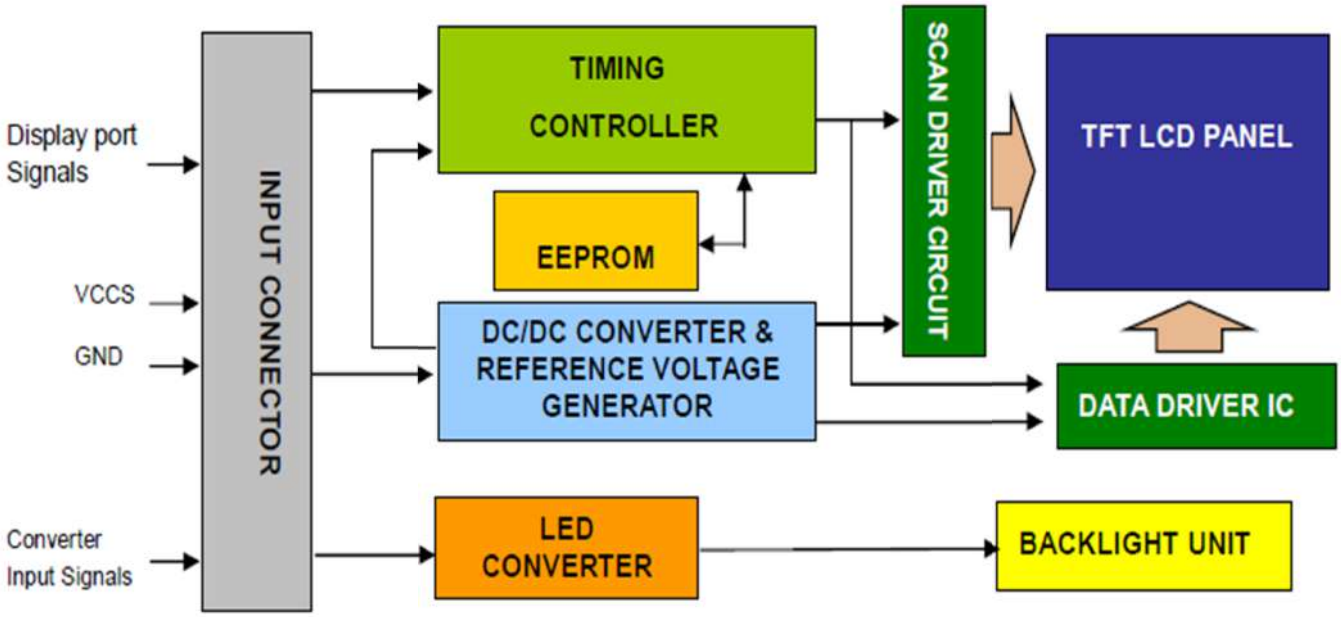
3. ELECTRICAL CHARACTERISTICS

3.1 TFT LCD MODULE



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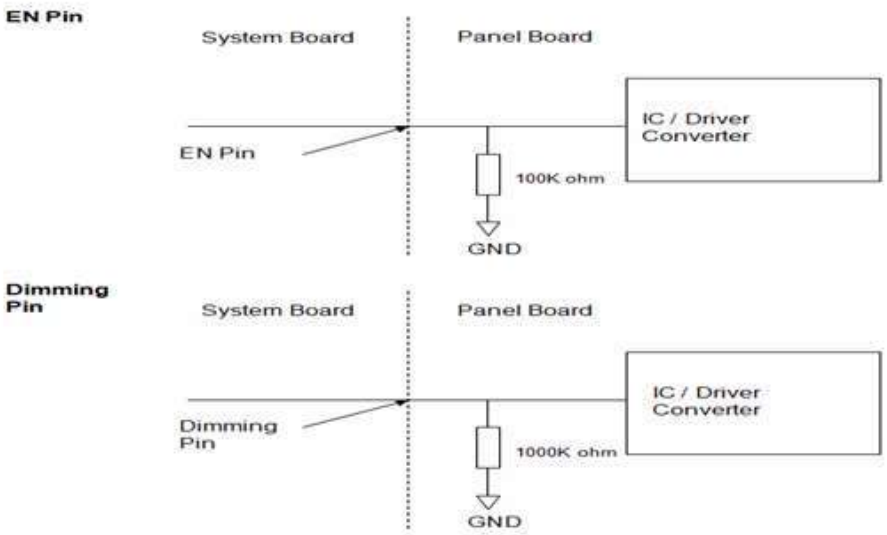
3.2 INPUT TERMINAL PIN ASSIGNMENT

PIN ASSIGNMENT

Pin No.	Symbol	Function	Polarity	Note
1	NC	No Connection(Reserved LCD test)		
2	H_GND	High Speed Ground		
3	NC	No Connection(Reserved LCD test)		
4	NC	No Connection(Reserved LCD test)		
5	H_GND	High Speed Ground		
6	ML0-	Complement Signal-Lane 0		
7	ML0+	True Signal-Main-Lane 0		
8	H_GND	High Speed Ground		
9	AUX+	True Signal-Auxiliary Channel		
10	AUX-	Complement Signal- Auxiliary Channel		
11	H_GND	High Speed Ground		
12	VCCS	Power Supply +3.3V (typical)		
13	VCCS	Power Supply +3.3V (typical)		
14	NC	No Connection(Reserved LCD test)		
15	GND	Ground		
16	GND	Ground		
17	HPD	Hot Plug Detect		
18	BL_GND	BL Ground		
19	BL_GND	BL Ground		
20	BL_GND	BL Ground		
21	BL_GND	BL Ground		
22	LED_EN	BL_Enable Signal of LED Converter		
23	LED_PWM	PWM Dimming Control Signal of LED Converter		
24	NC	No Connection(Reserved LCD test)		
25	NC	No Connection(Reserved LCD test)		
26	LED_VCCS	BL Power +12.0V (typical)		
27	LED_VCCS	BL Power +12.0V (typical)		
28	LED_VCCS	BL Power +12.0V (typical)		
29	LED_VCCS	BL Power +12.0V (typical)		
30	NC	No Connection(Reserved LCD test)		

Note (1) Connector Part No.: I-PEX 20455-030E-76 or equivalent.

Note (2)User's connector Part No.: I-PEX 20453-030T-03 or equivalent.



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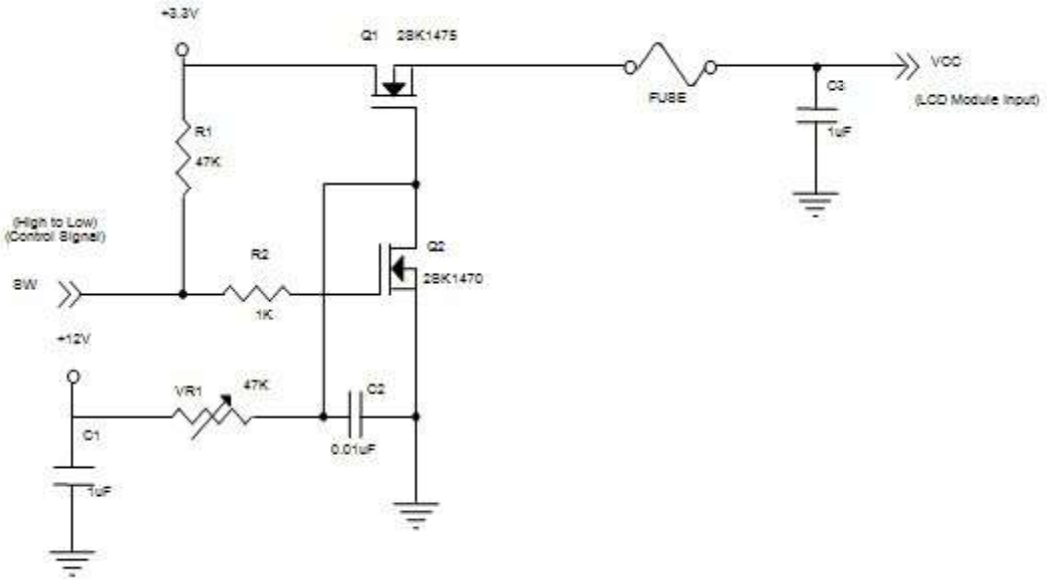
3.3 ELECTRICAL CHARACTERISTICS

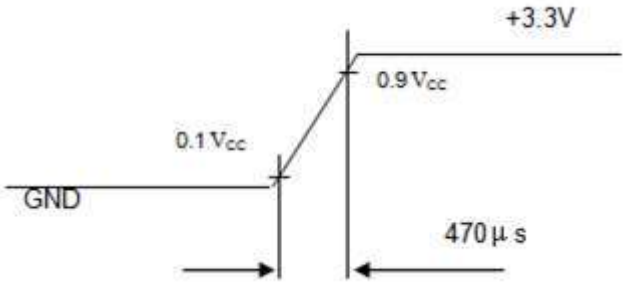
3.3.1 TFT LCD MODULE

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
Power Supply Voltage		VCC	3.0	3.3	3.6	V	-
Ripple Voltage		VRP	-	-	100	mVp-p	
Rush Current		IRUSH	-	-	2.0	A	(2)
Power Supply Current	White	Icc	-	440	535	mA	(3)a
	Black		-	340	410	mA	(3)b
HPD Impedance		VHPD	30K			ohm	
HPD	High Level	VIH	2.25	-	2.75	V	-
	Low Level	VIL	0	-	0.4	V	-

Note (1)The module should be always operated within above ranges.

Note (2)Measurement Conditions:





Note (3) The specified power supply current is under the conditions at V_{DD} =3.3V, Ta = 25 ± 2 ℃, DC Current and f_v = 60 Hz, whereas a power dissipation check pattern below is displayed.

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a. White Pattern

Active Area

b. Black Pattern

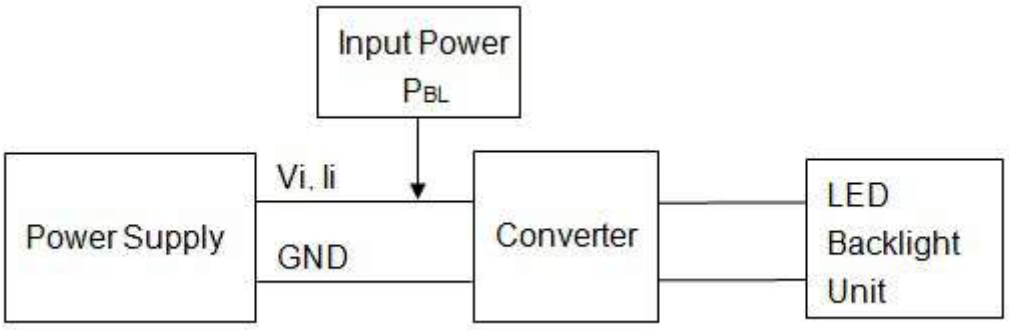
Active Area

3.3.2 BACKLIGHT UNIT

Ta = 25 ± 2 ℃

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
Converter Power Supply Voltage		Vi	10.8	12.0	13.2	V	
Converter Power Supply Current		Ii	0.6	0.8	1.0	A	@ Vi = 12V (Duty 100%)
Rush Current		IRUSH	-	-	5	A	(4)
Backlight Power Consumption		PBL	-	10	-	W	@ Vi = 12V (Duty 100%)
EN Control Level	Backlight on	-	2.0	3.3	5.0	V	
	Backlight off		0	---	0.15	V	
PWM Control Level	PWM High Level	-	2.0	3.3	5.0	V	
	PWM Low Level		0	-	0.15	V	
PWM Control Duty Ratio		-	1	-	100	%	@200Hz
PWM Control Frequency		fPWM	190	200	20k	Hz	(2)
LED Life Time		LL	50,000	70,000	-	Hrs	(3)

Note (1) LED current is measured by utilizing a high frequency current meter as shown below:



Note (2) At 20k Hz PWM control frequency，duty ratio range is restricted from 20% to 100%.

Note (3) The lifetime of LED is estimated data and defined as the time when it continues to operate under the conditions at Ta = 25 ±2 ℃ and Duty 100% until the brightness becomes ≦ 50% of its original value. Operating LED under high temperature environment will reduce life time and lead to color shift.

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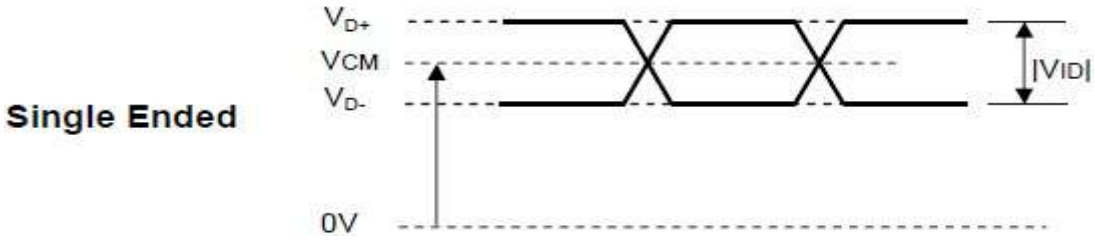
3.4 DISPLAY PORT INPUT SIGNAL TIMING SPECIFICATIONS

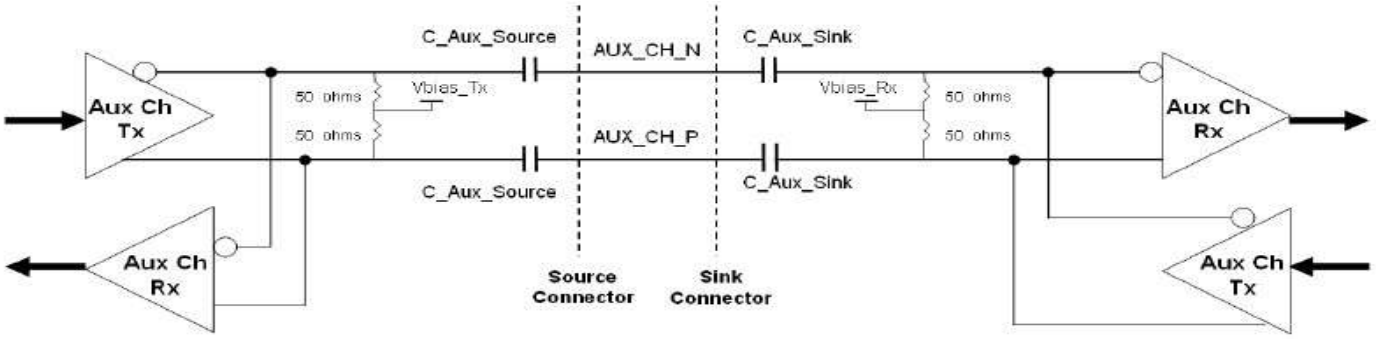
3.4.1 ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Differential Signal Common Mode Voltage(MainLink and AUX)	VCM	0		2	V	(1)(4)
AUX AC Coupling Capacitor	C_Aux_Source	75		200	nF	(2)
Main Link AC Coupling Capacitor	C_ML_Source	75		200	nF	(3)

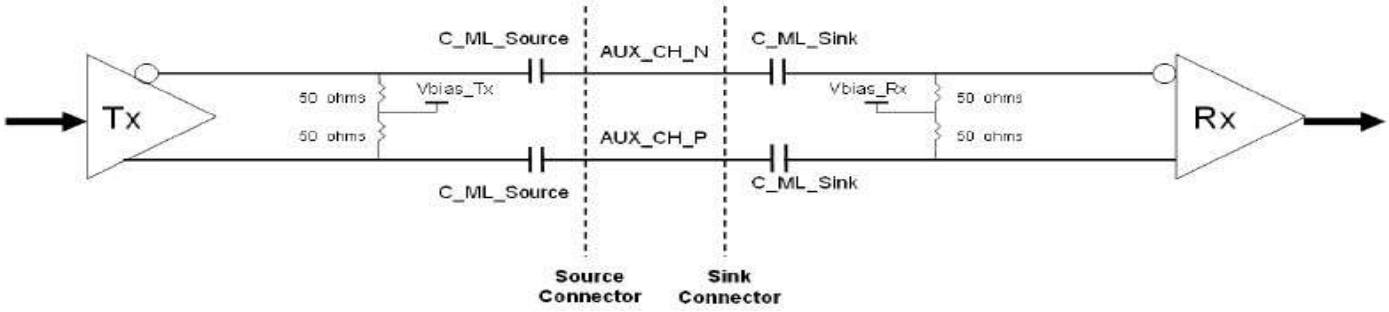
Note (1) Display port interface related AC coupled signals should follow VESA DisplayPort Standard Version1. Revision 1a and VESA Embedded DisplayPortTM Standard Version 1.2. There are many optional items described in eDP1.2. If some optional item is requested, please contact us.



Note (2) Recommended eDP AUX Channel topology is as below and the AUX AC Coupling Capacitor (C_Aux_Source) should be placed on the source device.



Note (3) Recommended Main Link Channel topology is as below and the Main Link AC Coupling Capacitor (C_ML_Source) should be placed on the source device.



Note (4) The source device should pass the test criteria described in DisplayPortCompliance Test Specification(CTS) 1.1

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3.4.2 COLOR DATA INPUT ASSIGNMENT

The brightness of each primary color (red, green and blue) is based on the 8-bit gray scale data input for the color. The higher the binary input the brighter the color. The table below provides the assignment of color versus data input.

Color		Data Signal																							
		Red								Green								Blue							
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
Basic Colors	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gray Scale Of Red	Red(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(1)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(2)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Red(253)	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(254)	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale Of Green	Green(0)/Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	Green(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Green(253)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0
	Green(254)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	Green(255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Gray Scale Of Blue	Blue(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Blue(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Blue(253)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1
	Blue(254)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0
	Blue(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

Note (1)0: Low Level Voltage, 1: High Level Voltage

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3.5 INTERFACE TIMING

INPUT SIGNAL TIMING SPECIFICATIONS

The input signal timing specifications are shown as the following table and timing diagram.

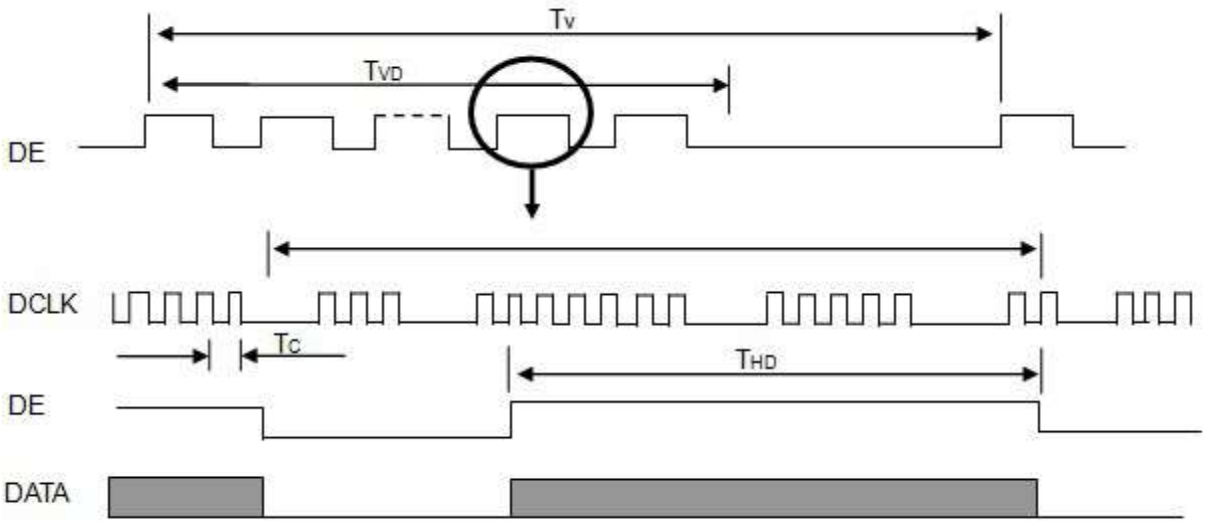
Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
Frame rate	Frequency	Fr	-	60	-	Hz	-
DCLK	Clock frequency	Fc	50	65	81	MHz	-
Vertical Display Term	Total	Tv	783	806	968	Th	-
	Active Display	Tvd	768	768	768	Th	-
	Blank	Tvb	Tv-Tvd	38	Tv-Tvd	Th	-
Horizontal Display Term	Total	Th	1244	1344	2024	Tc	Th=Thd+Thb
	Active Display	Thd	1024	1024	1024	Tc	-
	Blank	Thb	Th-Thd	320	Th-Thd	Tc	-

Note (1)Because this module is operated by DE only mode, Hsync and Vsync input signals should be set to low logic level or ground. Otherwise, this module would operate abnormally.

Note (2) The Tv(Tvd+Tvb) must be integer, otherwise, the module would operate abnormally.

Note (3) The maximum clock frequency = Tv* Th*60＜81 MHz.

INPUT SIGNAL TIMING DIAGRAM



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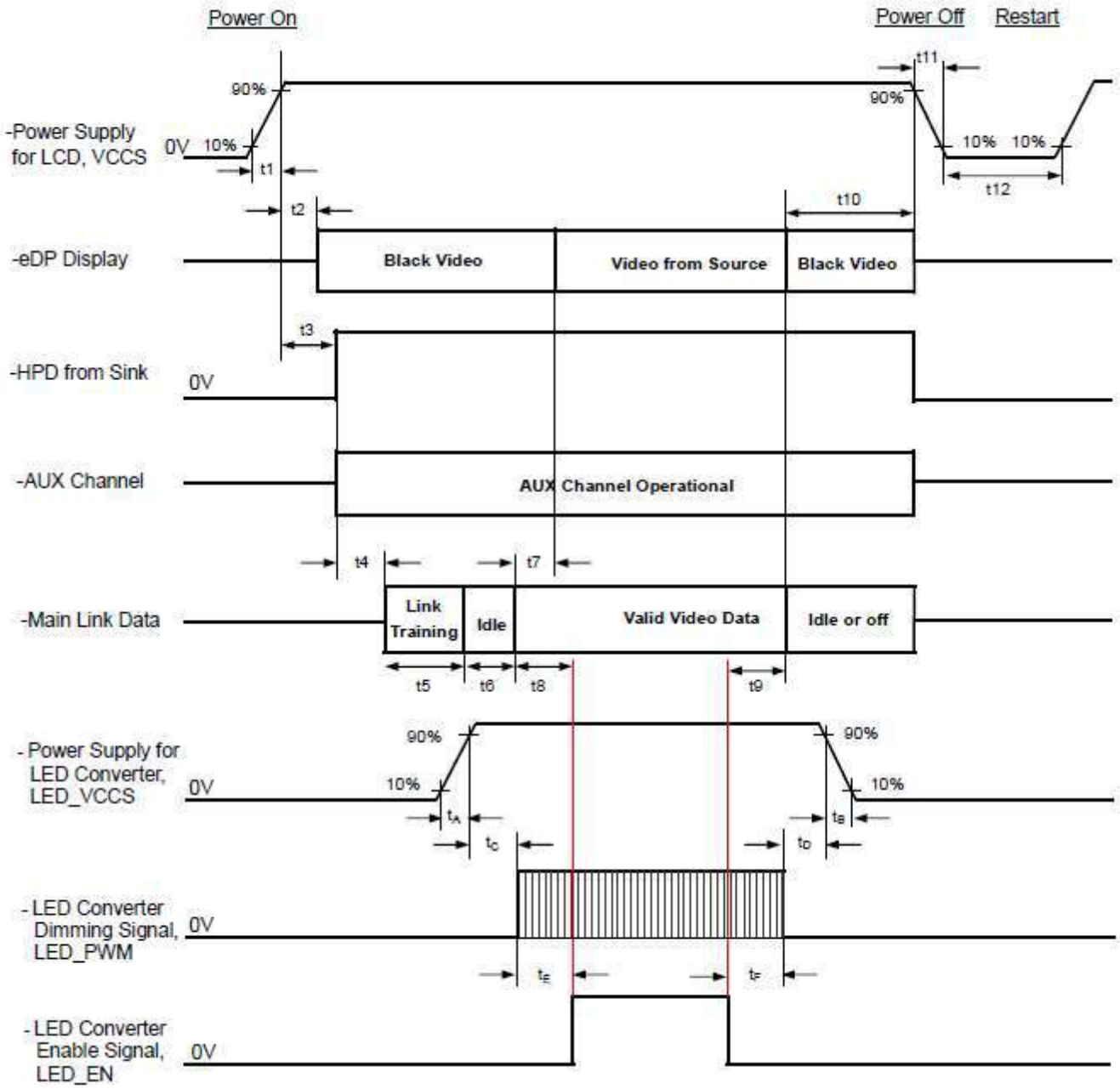
3.6 POWER ON/OFF SEQUENCE

To prevent a latch-up or DC operation of LCD assembly, the power on/off sequence should be as the diagram below.



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Timing Specification

Parameter	Description	Reqd. By	Value		Unit	Notes
			Min	Max		
t1	Power rail rise time, 10% to 90%	Source	0.5	10	ms	-
t2	Delay from LCD,VCCS to black video generation	Sink	0	200	ms	Automatic Black Video generation prevents display noise until valid video data is received from the Source (see Notes:2 and 3 below)
t3	Delay from LCD,VCCS to HPD high	Sink	0	200	ms	Sink AUX Channel must be operational upon HPD high (see Note:4 below)
t4	Delay from HPD high to link training initialization	Source	0	-	ms	Allows for Source to read Link capability and initialize
t5	Link training duration	Source	0	-	ms	Dependant on Source link training protocol
t6	Link idle	Source	0	-	ms	Min Accounts for required BS-Idle pattern. Max allows for Source frame synchronization
t7	Delay from valid video data from Source to video on display	Sink	0	50	ms	Max value allows for Sink to validate video data and timing. At the end of T7, Sink will indicate the detection of valid video data by setting the SINK_STATUS bit to logic 1 (DPCD 00205h, bit 0), and Sink will no longer generate automatic Black Video
t8	Delay from valid video data from Source to backlight on	Source	80	-	ms	Source must assure display video is stable *: Recommended by INX. To avoid garbage image.
t9	Delay from backlight off to end of valid video data	Source	50	-	ms	Source must assure backlight is no longer illuminated. At the end of T9, Sink will indicate the detection of no valid video data by setting the SINK_STATUS bit to logic 0 (DPCD 00205h, bit 0), and Sink will automatically display Black Video. (See Notes: 2 and 3 below) *: Recommended by INX. To avoid garbage image.
t10	Delay from end of valid video data from Source	Source	0	500	ms	Black video will be displayed after

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	to power off					receiving idle or off signals from Source
t11	VCCS power rail fall time, 90% to 10%	Source	0.5	10	ms	-
t12	VCCS Power off time	Source	500	-	ms	-
t_A	LED power rail rise time, 10% to 90%	Source	0.5	10	ms	-
t_B	LED power rail fall time, 90% to 10%	Source	0	10	ms	-
t_C	Delay from LED power rising to LED dimming signal	Source	1	-	ms	-
t_D	Delay from LED dimming signal to LED power falling	Source	1	-	ms	-
t_E	Delay from LED dimming signal to LED enable signal	Source	0	-	ms	-
t_F	Delay from LED enable signal to LED dimming signal	Source	0	-	ms	-

Note (1) Please don't plug or unplug the interface cable when system is turned on.

Note (2) The Sink must include the ability to automatically generate Black Video autonomously. The Sink must automatically enable Black Video under the following conditions:

- Upon LCDVCC power-on (within T2 max)
- When the "NoVideoStream_Flag" (VB-ID Bit 3) is received from the Source (at the end of T9)

Note (3) The Sink may implement the ability to disable the automatic Black Video function, as described in Note (2), above, for system development and debugging purposes.

Note (4) The Sink must support AUX Channel polling by the Source immediately following LCDVCC power-on without causing damage to the Sink device (the Source can re-try if the Sink is not ready). The Sink must be able to response to an AUX Channel transaction with the time specified within T3 max.

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4. OPTICAL CHARACTERISTICS

4.1 TEST CONDITIONS

Item	Value	Unit
Ambient Temperature (Ta)	25±2	℃
Ambient Humidity (Ha)	50±10	%RH
Supply Voltage	According to typical value in "ELECTRICAL CHARACTERISTICS"	
Input Signal		
LED Light Bar Input Current Per Input Pin		

4.2 OPTICAL SPECIFICATIONS

The relative measurement methods of optical characteristics are shown in 4.2 and all items are measured at the center point of screen except white variation. The following items should be measured under the test conditions described in 4.1 and stable environment shown in Note (5).

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Color Chromaticity	Red	Rx	θx=0°, θY =0° CS-1000T	0.597	0.647	0.697	-	(1), (5)
		Ry		0.288	0.338	0.388		
	Green	Gx		0.271	0.321	0.371		
		Gy		0.556	0.606	0.656		
	Blue	Bx		0.107	0.157	0.207		
		By		0.000	0.039	0.089		
	White	Wx		0.263	0.313	0.363		
		Wy		0.279	0.329	0.379		
Center Luminance of White		LC		320	400			(4), (5)
Contrast Ratio		CR		1800	2500			(2), (5)
Response Time		TR	θx=0°, θY =0°	-	16	21	-	(3)
		TF		-	7	14	-	
White Variation		δW	θx=0°, θY =0° USB2000	-	1.25	1.33		(5), (6)
Viewing Angle	Horizontal	θx+	CR ≧ 10 USB2000	80	88	-	Deg.	(1), (5)
		θx-		80	88	-		
	Vertical	θY+		80	88	-		
		θY-		80	88	-		

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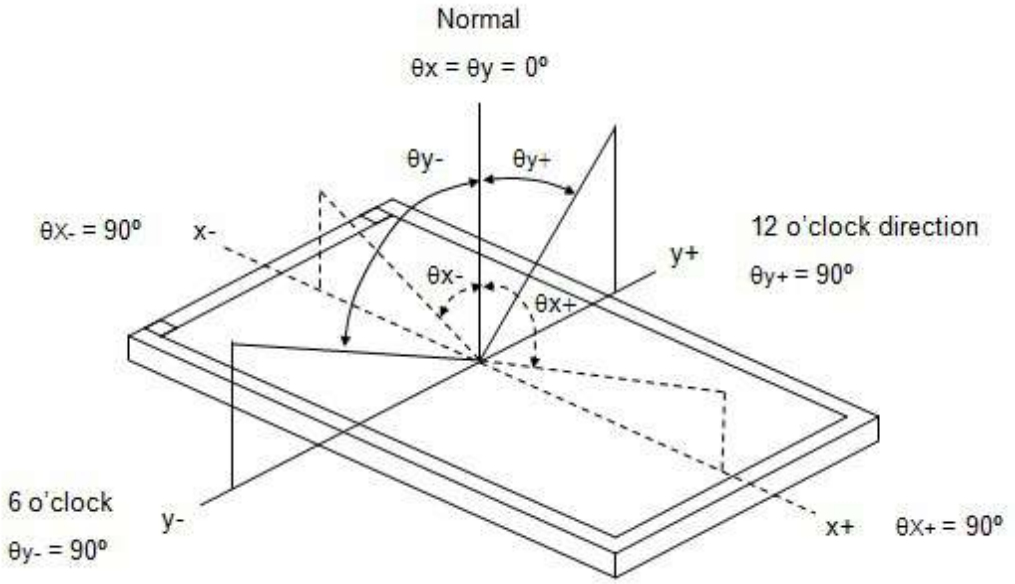
Note (1)Definition of Viewing Angle (θx, θy):



Note (2)Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

Contrast Ratio (CR) = L255 / L0

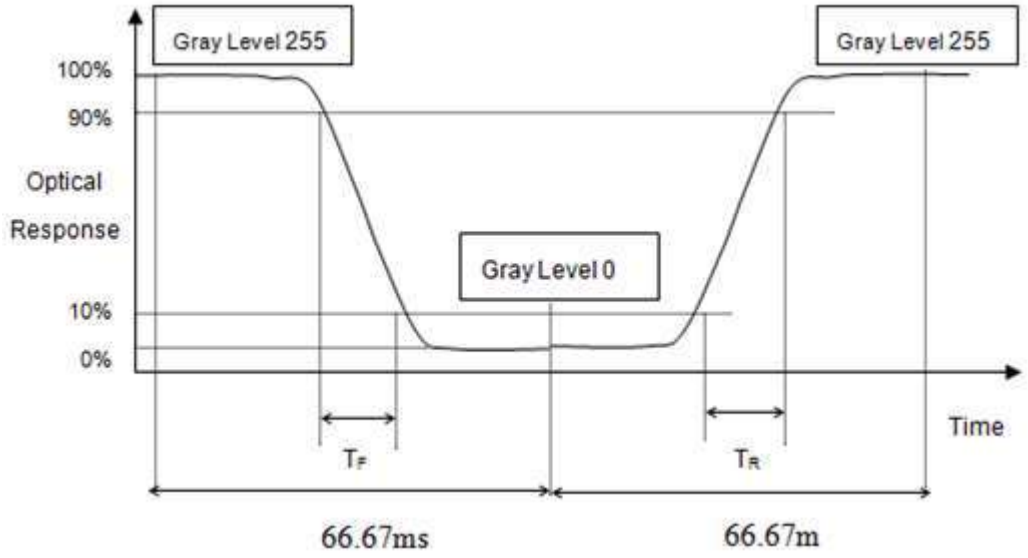
L255: Luminance of gray level 255

L0: Luminance of gray level 0

CR = CR (5)

CR (X) is corresponding to the Contrast Ratio of the point X at Figure in Note (6).

Note (3)Definition of Response Time (T_R, T_F):



Note (4) Definition of Luminance of White (L_C):

Measure the luminance of gray level 255 at center point

L_C = L (5)

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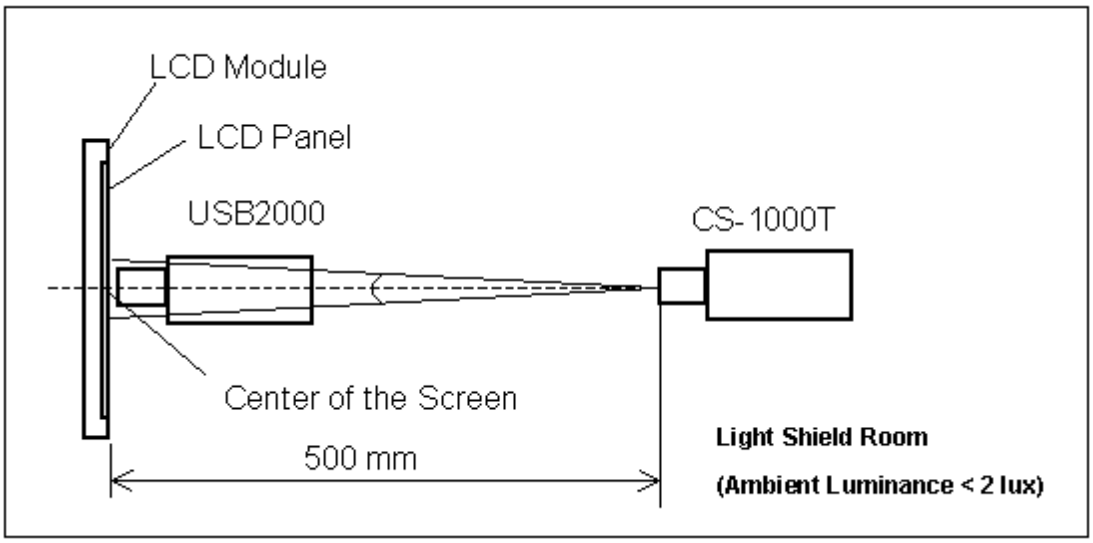
L (x) is corresponding to the luminance of the point X at Figure in Note (6).

Note (5) Measurement Setup:

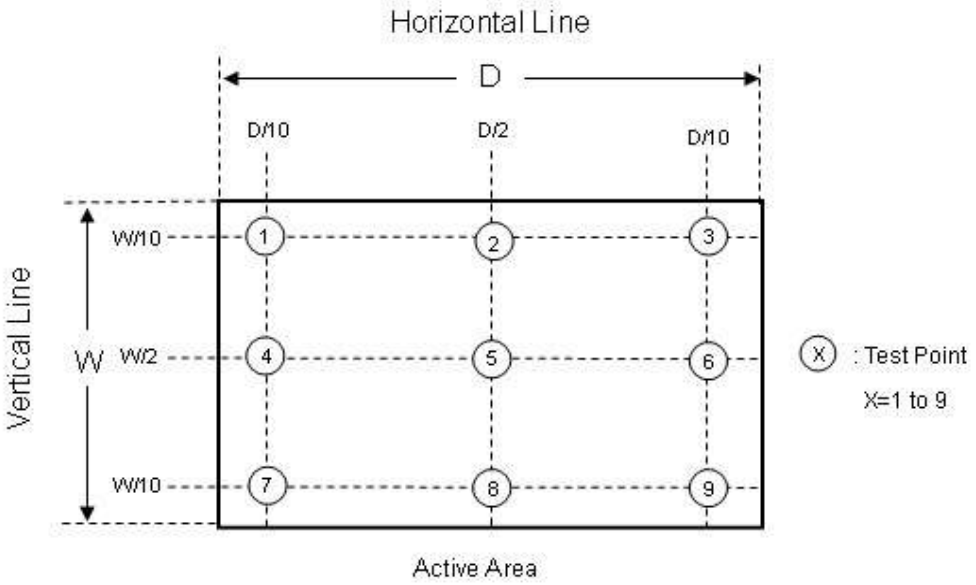
The LCD module should be stabilized at given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 20 minutes in a windless room.



Note (6) Definition of White Variation (δW):

Measure the luminance of gray level 63 (255) at 9 points

$$\delta W = \frac{\text{Maximum [L (1), L (2), L (3), L (4), L (5) , L (6), L (7), L (8), L (9)]}}{\text{Minimum [L (1), L (2), L (3), L (4), L (5) , L (6), L (7), L (8), L (9)]}}$$



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5. RELIABILITY TEST CRITERIA

Test Item	Test Condition	Note
High Temperature Storage Test	60℃, 240 hours	(1),(2) (4),(5)
Low Temperature Storage Test	-20℃, 240 hours	
Thermal Shock Storage Test	-20℃, 0.5 hour←→60℃, 0.5 hour; 100cycles, 1 hour/cycle)	
High Temperature Operation Test	60℃, 240 hours	
Low Temperature Operation Test	0℃, 240 hours	
High Temperature & High Humidity Operation Test	50℃, RH 80%, 300 hours	
ESD Test (Operation)	150pF, 330Ω, 1 sec/cycle Condition 1 : panel contact, ±8 KV Condition 2 : panel non-contact ±15 KV	(1), (4)
Shock (Non-Operating)	50G, 11ms, half sine wave, 1 time for ± X, ± Y, ± Z direction	(2), (3)
Vibration (Non-Operating)	1.5G, 10 ~ 300 Hz sine wave, 10 min/cycle, 3 cycles each X, Y, Z direction	

Note (1)There should be no condensation on the surface of panel during test ,

Note (2) Temperature of panel display surface area should be 65ºC Max.

Note (3) At testing Vibration and Shock, the fixture in holding the module has to be hard and rigid enough so that the module would not be twisted or bent by the fixture.

Note (4) In the standard conditions, there is no function failure issue occurred. All the cosmetic specification is judged before reliability test.

Note (5) Before cosmetic and function test, the product must have enough recovery time, at least 24 hours at room temperature.

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6. PACKAGING

6.1 PACKING SPECIFICATIONS

(1) 22pcs LCD modules / 1 Box

(2) Box dimensions: 511 (L) X 420 (W) X 360 (H) mm

(3) Weight: approximately 18Kg (22 modules per box)

6.2 PACKING METHOD

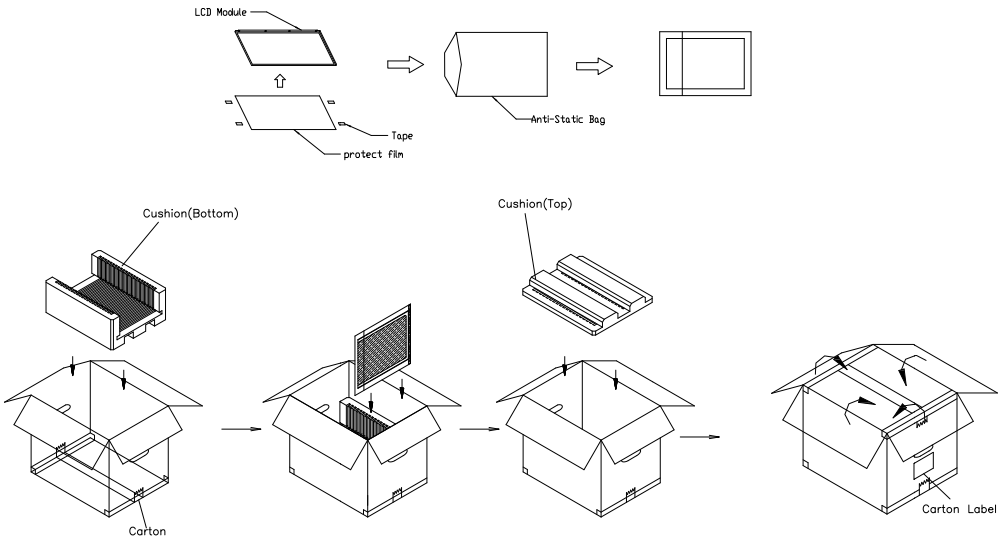

Figure. 6-1 Packing method

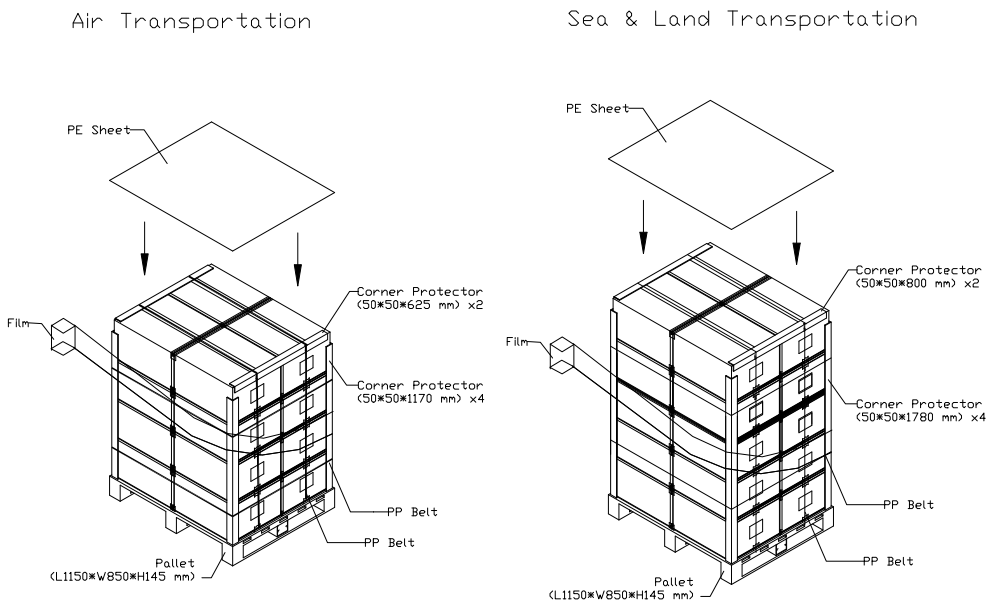

Figure. 6-2 Packing method

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6.3 UN-PACKING METHOD

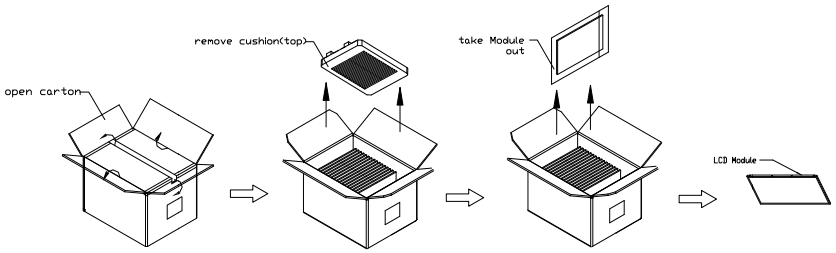

Figure. 6-3 UN-Packing

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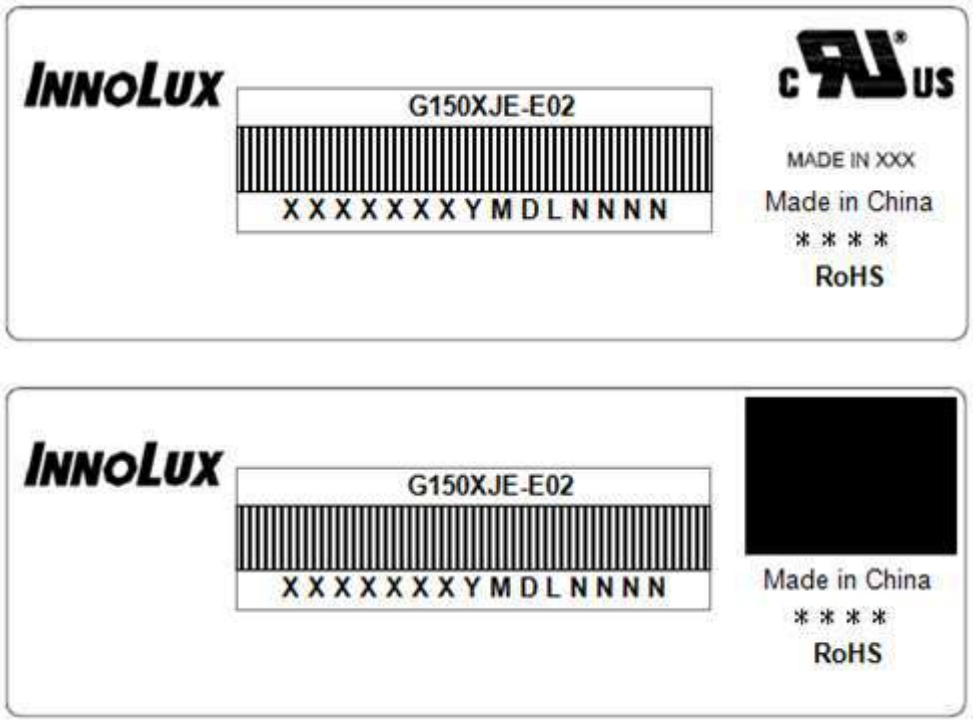
7. DEFINITION OF LABELS

7.1 INX MODULE LABEL

The barcode nameplate is pasted on each module as illustration, and its definitions are as following explanation.

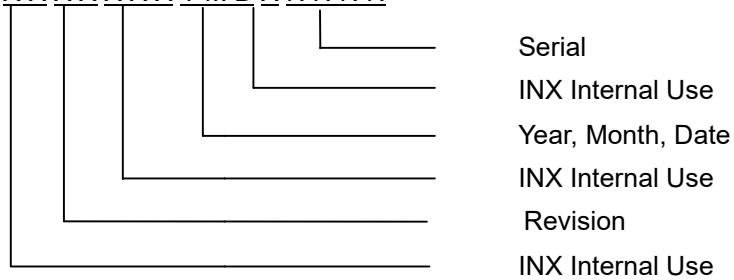


Note (1) Safety Compliance(UL logo) will open after C1 version.

(a) Model Name: G150XJE-E02

(b) ＊＊＊＊ : Factory ID

(c) Serial ID: X X X X X X X Y M D X N N N N



Serial ID includes the information as below:

(a) Manufactured Date: Year: 1~9, for 2021~2029
Month: 1~9, A~C, for Jan. ~ Dec.
Day: 1~9, A~Y, for 1st to 31st, exclude I , O and U

(b) Revision Code: cover all the change

(c) Serial No.: Manufacturing sequence of product

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8. PRECAUTIONS

8.1 ASSEMBLY AND HANDLING PRECAUTIONS

(1) The module should be assembled into the system firmly by using every mounting hole. Be careful not to twist or bend the module.

(2) While assembling or installing modules, it can only be in the clean area. The dust and oil may cause electrical short or damage the polarizer.

(3) Use fingerstalls or soft gloves in order to keep display clean during the incoming inspection and assembly process.

(4) Do not press or scratch the surface harder than a HB pencil lead on the panel because the polarizer is very soft and easily scratched.

(5) If the surface of the polarizer is dirty, please clean it by some absorbent cotton or soft cloth. Do not use Ketone type materials (ex. Acetone), Ethyl alcohol, Toluene, Ethyl acid or Methyl chloride. It might permanently damage the polarizer due to chemical reaction.

(6) Wipe off water droplets or oil immediately. Staining and discoloration may occur if they left on panel for a long time.

(7) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contacting with hands, legs or clothes, it must be washed away thoroughly with soap.

(8) Protect the module from static electricity, it may cause damage to the C-MOS Gate Array IC.

(9) Do not disassemble the module.

(10) Do not pull or fold the lamp wire.

(11) Pins of I/F connector should not be touched directly with bare hands.

8.2 STORAGE PRECAUTIONS

(1)When storing for a long time, the following precautions are necessary.

(a) Store them in a dark place. Do not expose the module to sunlight or fluorescent light. Keep the temperature between 5°C and 30°C at humidity 50+-10%RH.

(b) The polarizer surface should not come in contact with any other object.

(c) It is recommended that they be stored in the container in which they were shipped.

(d) Storage condition is guaranteed under packing conditions.

(e) The phase transition of Liquid Crystal in the condition of the low or high storage temperature will be recovered when the LCD module returns to the normal condition

(2) High temperature or humidity may reduce the performance of module. Please store LCD module within the specified storage conditions.

(3) It is dangerous that moisture come into or contacted the LCD module, because the moisture may damage LCD module when it is operating.

(4) It may reduce the display quality if the ambient temperature is lower than 10 ºC. For example, the response time will become slowly, and the starting voltage of lamp will be higher than the room temperature.

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8.3 OTHER PRECAUTIONS

(1) Normal operating condition

(a) Display pattern: dynamic pattern (Real display)

(Note) Long-term static display can cause image sticking.

(2) Operating usages to protect against image sticking due to long-term static display

(a) Suitable operating time: under 16 hours a day.

(b) Static information display recommended to use with moving image.

(c)Cycling display between 5 minutes' information(static) display and 10 seconds' moving image.

(3) Abnormal condition just means conditions except normal condition.

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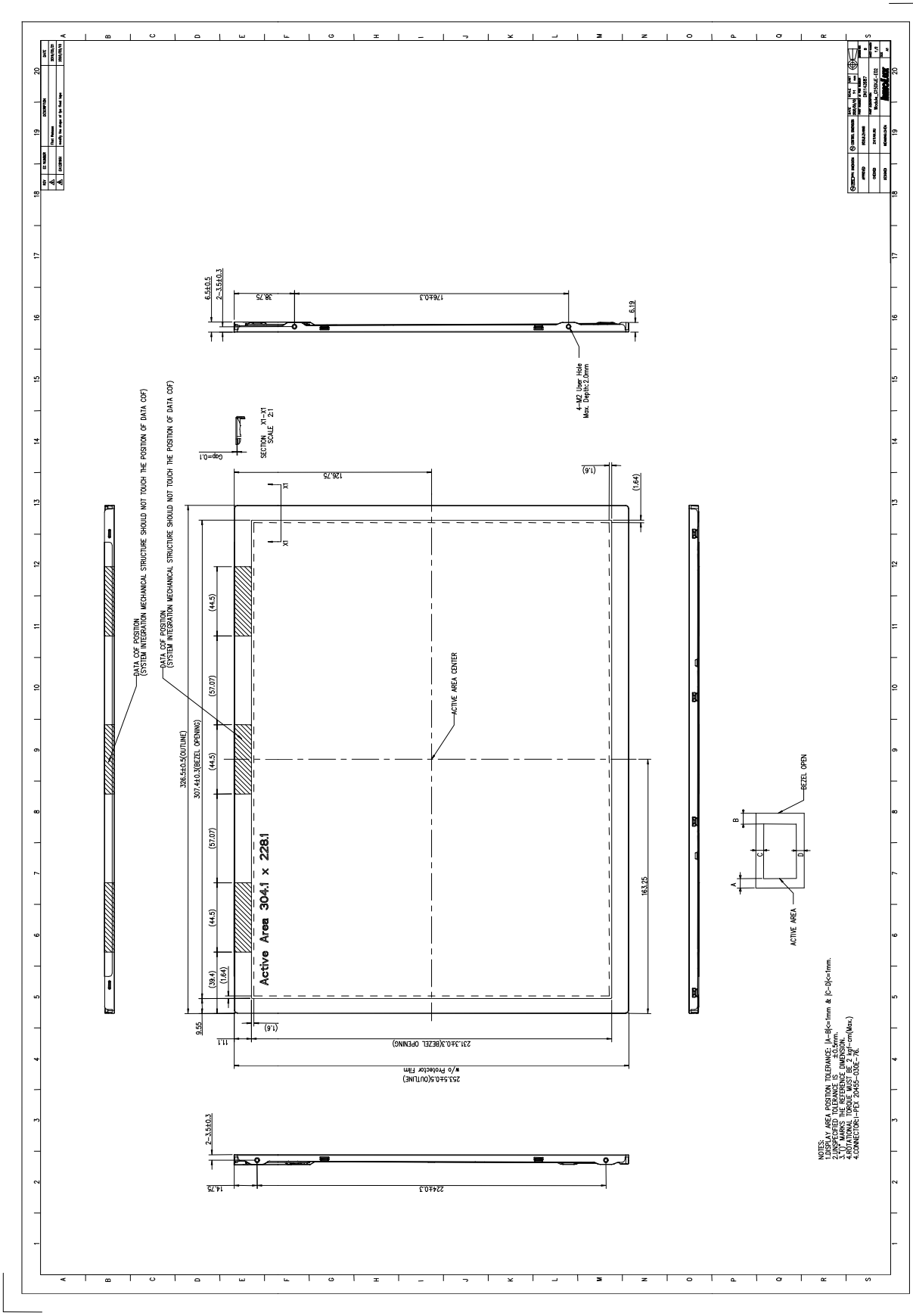
9.MECHANICAL CHARACTERISTICS



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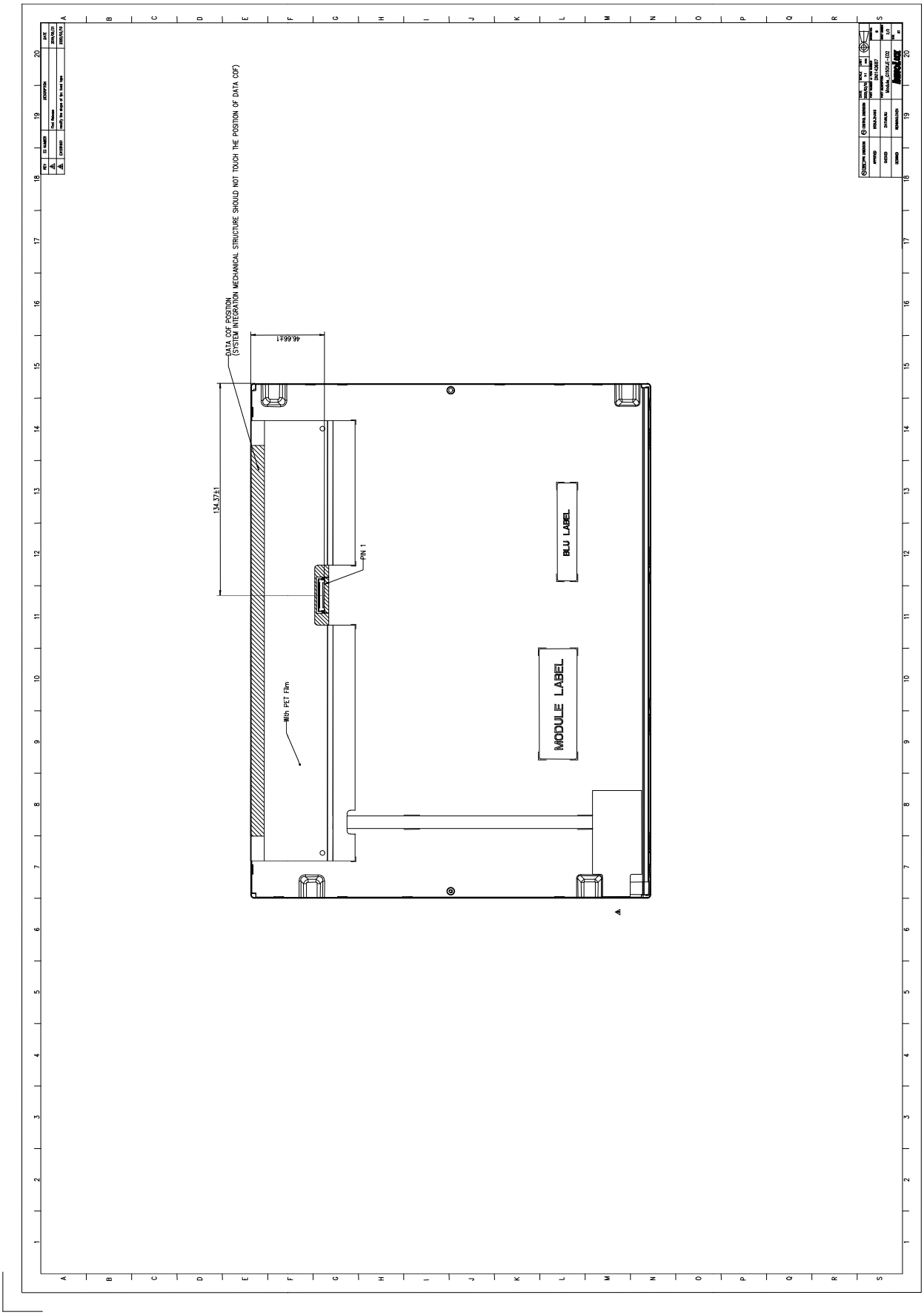

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