Doc. Number :

☐ Tentative Specification
☐ Preliminary Specification
■ Approval Specification

MODEL NO.: M315DJJ
SUFFIX: Q01

Customer: Common

APPROVED BY **SIGNATURE**

Name / Title _____ _____

Note
Product version C1

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

Approved By	Checked By	Prepared By
阮泰郎	陳立錚	江乃瑩

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REVISION HISTORY

Version	Date	Page	Description
3.0	2015.11.09	All	Spec Ver.3.0 was first issued.
3.1	2016.12.31	27	Update 2D drawing

1. GENERAL DESCRIPTION

1.1 OVERVIEW

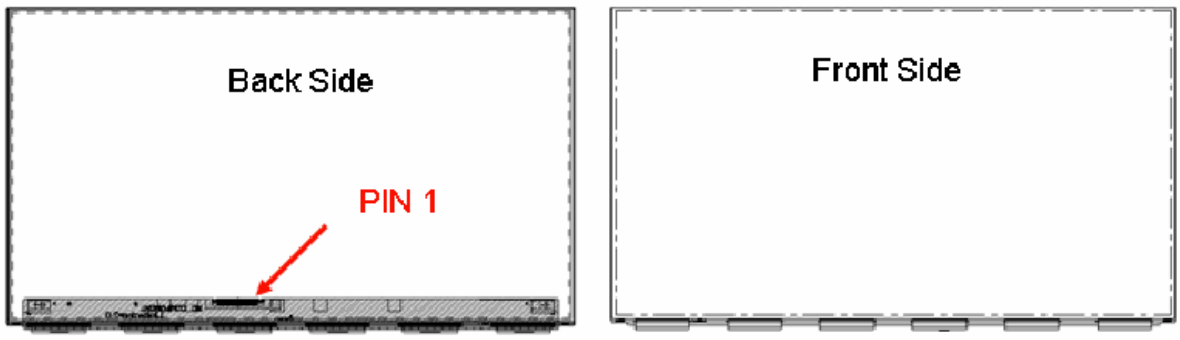
The M315DJJ-Q01 is a 31.5” TFT Liquid Crystal Display Monitor cell with driver ICs and a 51-pins 8lane – V by 1 circuit board. The product supports 3840 x 2160 UHD mode and can display up to 1.073G colors(8bits +FRC). The backlight unit is not built in.

1.2 GENERAL SPECIFICATIONS

Item	Specification	Unit	Note
Screen Size	31.5” real Diagonal	mm	
Driver Element	a-si TFT active matrix	-	-
Pixel Number	3840 x R.G.B. x 2160	pixel	-
Pixel Pitch	0.181 (H) x 0.181 (V)	mm	-
Pixel Arrangement	RGB vertical stripe	-	-
Display Colors	1.073G(8bits+FRC)	color	-
Transmissive Mode	Normally Black	-	-
Surface Treatment	AG type, 3H hard coating, Haze 25	-	-
Power Consumption	Total cell: 14.66 W (Max.)		(1)

) Connector mounting position

(3) Please refer to sec.3.1 for more information of power consumption.



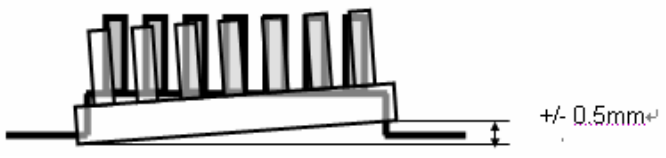
2. MECHANICAL SPECIFICATIONS

Item	Min.	Typ.	Max.	Unit	Note
Weight	839.8	884	928.2	g	
I/F connector mounting position	The mounting inclination of the connector makes the screen center within ±0.5mm as the horizontal.				(2)

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

(2) Connector mounting position

(3) Please refer to sec.3.1 for more information of power consumption.



3. ABSOLUTE MAXIMUM RATINGS

3.1 ABSOLUTE RATINGS OF ENVIRONMENT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	TST	-20	60	ºC	(1)
Operating Ambient Temperature	TOP	0	50	ºC	(1), (2)

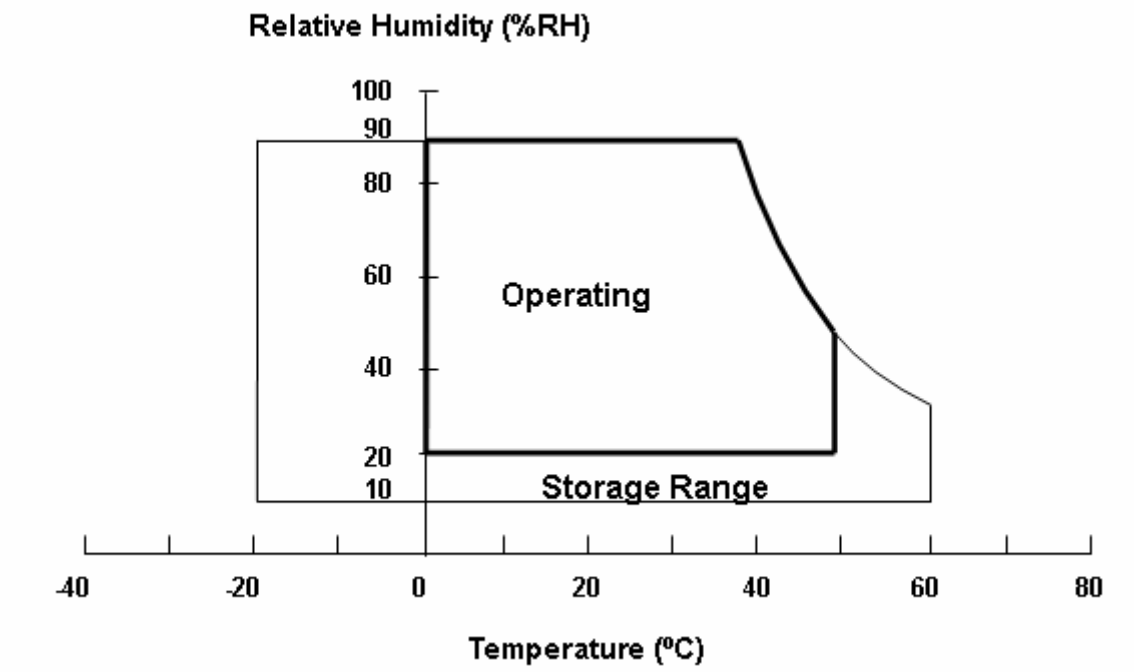
Note (1)

(a) 90 %RH Max.

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

(c) No condensation.

Note (2) The temperature of panel surface should be 0 ºC min. and 65 ºC max.



3.2 ELECTRICAL ABSOLUTE RATINGS

3.2.1 TFT LCD OPEN CELL

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Power Supply Voltage	VCCS	-0.3	13.5	V	(1)
Logic Input Voltage	V_{IN}	-0.3	3.6	V	
Component thermal	---	---	Tj(max.)	℃	(2)

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 Conditons.

Note (2) It's important and necessary to follow the Thermal Application Note, otherwise it may lead to abnormal display or component damage. INX thermal application note would be provided by INX in the design-in stage.

3.3 ABSOLUTE RATINGS OF ENVIRONMENT (OPEN CELL)

High temperature or humidity may reduce the performance of panel. Please store LCD panel within the specified storage conditions.

Storage Condition: With packing.

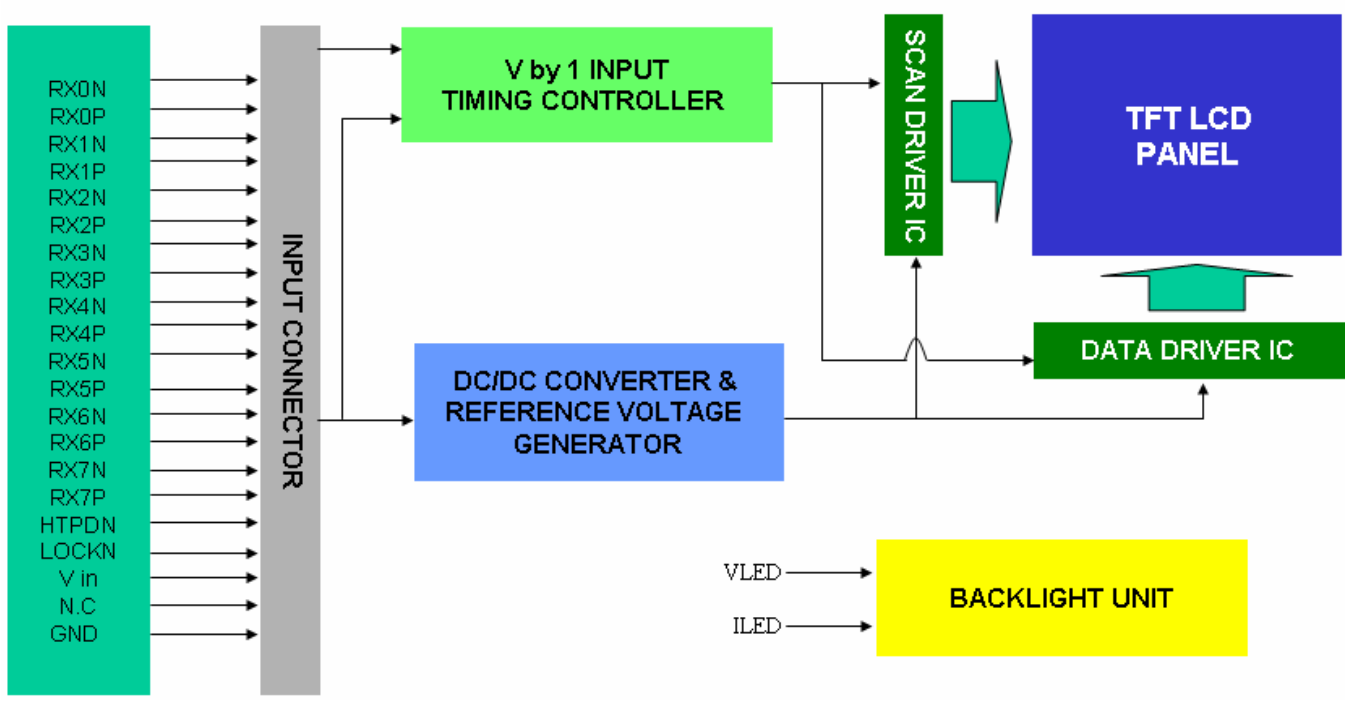
Storage temperature range: 25±5 ºC.

Storage humidity range: 50±10%RH.

Shelf life: 30days4. ELECTRICAL SPECIFICATIONS

4. ELECTRICAL SPECIFICATIONS

4.1 FUNCTION BLOCK DIAGRAM



4.2 INTERFACE CONNECTIONS

PIN ASSIGNMENT

Pin	Name	Description	Note
1	Vin	Power input (+12V)	
2	Vin	Power input (+12V)	
3	Vin	Power input (+12V)	
4	Vin	Power input (+12V)	
5	Vin	Power input (+12V)	
6	Vin	Power input (+12V)	
7	Vin	Power input (+12V)	
8	Vin	Power input (+12V)	
9	N.C.	No Connection	(2)
10	GND	Ground	
11	GND	Ground	
12	GND.	Ground	
13	GND.	Ground	
14	GND.	Ground	
15	N.C.	No Connection	(2)
16	N.C.	No Connection	(2)
17	N.C.	No Connection	(2)
18	N.C	For internal use, no connection	
19	N.C	For internal use, no connection	
20	N.C.	No Connection	(2)
21	N.C.	No Connection	(2)
22	N.C.	No Connection	(2)
23	N.C.	No Connection	(2)
24	N.C.	No Connection	(2)
25	HTPDN	Hot plug detect output, Open drain.	
26	LOCKN	Lock detect output, Open drain.	
27	GND	Ground	
28	RX0N	1st Pixel Negative VbyOne differential data input in area A. Lan 0	(1)
29	RX0P	1st Pixel Positive VbyOne differential data input in area A. Lan 0	
30	GND	Ground	
31	RX1N	2nd Pixel Negative VbyOne differential data input in area A. Lan 1	(1)
32	RX1P	2nd Pixel Positive VbyOne differential data input in area A. Lan 1	
33	GND	Ground	
34	RX2N	3rd Pixel Negative VbyOne differential data input in area A. Lan 2	(1)
35	RX2P	3rd Pixel Positive VbyOne differential data input in area A. Lan 2	
36	GND	Ground	
37	RX3N	4th Pixel Negative VbyOne differential data input in area A. Lan 3	(1)
38	RX3P	4th Pixel Positive VbyOne differential data input in area A. Lan 3	
39	GND	Ground	
40	RX4N	5th Pixel Negative VbyOne differential data input in area A. Lan 4	(1)
41	RX4P	5th Pixel Positive VbyOne differential data input in area A. Lan 4	
42	GND	Ground	
43	RX5N	6th Pixel Negative VbyOne differential data input in area A. Lan 5	(1)
44	RX5P	6th Pixel Positive VbyOne differential data input in area A. Lan 5	
45	GND	Ground	
46	RX6N	7th Pixel Negative VbyOne differential data input in area A. Lan 6	(1)
47	RX6P	7th Pixel Positive VbyOne differential data input in area A. Lan 6	
48	GND	Ground	
49	RX7N	8th Pixel Negative VbyOne differential data input in area A. Lan 7	(1)

Pin	Name	Description	Note
50	RX7P	8th Pixel Positive VbyOne differential data input in area A. Lan 7	
51	GND	Ground	

Connector Information

Item	Description
Manufacturer	FCN/ P-TWO
Type part number	FCN: WF23-402-5133 P-TWO: 187059-51221
User's Mating housing part number	JAE: FI-RE51HL

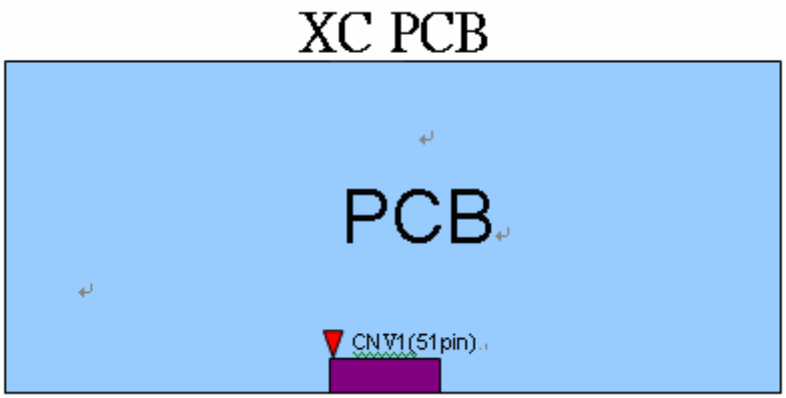
*Notice: There would be compatible issues if not using the indicated connectors in the matching list.

Note (1) V-by-One® HS Data Mapping

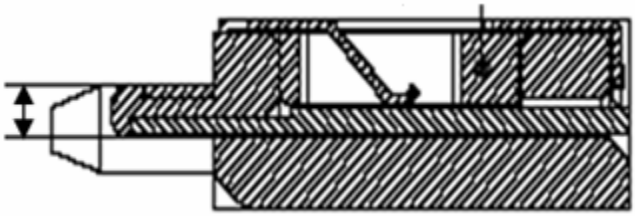
Lan	Data Stream
Lan 0	1, 9, 17, ..., 3825, 3833
Lan 1	2, 10, 18, ..., 3826, 3834
Lan 2	3, 11, 19, ..., 3827, 3835
Lan 3	4, 12, 20, ..., 3828, 3836
Lan 4	5, 13, 21, ..., 3829, 3837
Lan 5	6, 14, 22, ..., 3830, 3838
Lan 6	7, 15, 23, ..., 3831, 3839
Lan 7	8, 16, 24, ..., 3832, 3840

Note (2) Reserved for internal use. Please leave it open.

Note (3) VbyOne HS connector pin order defined as following:

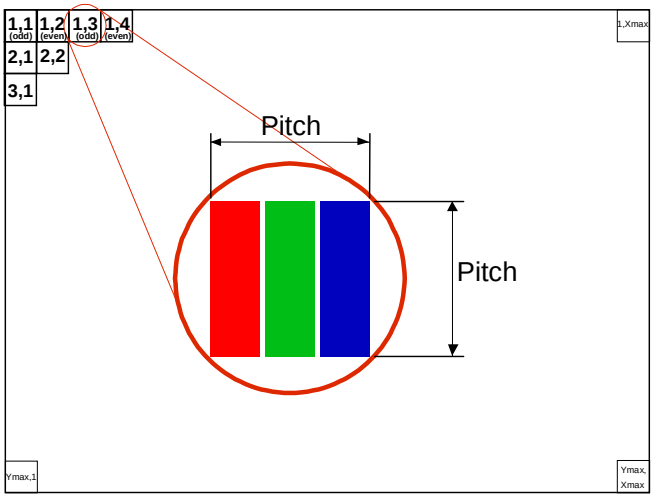


Note (4) V-by-One connector mating dimension range request is 0.93mm~1.0mm as below:



Note (5) The first pixel is odd.

Note (6) Input signal of even and odd clock should be the same timing



4.3 ELECTRICAL CHARACTERISTICS

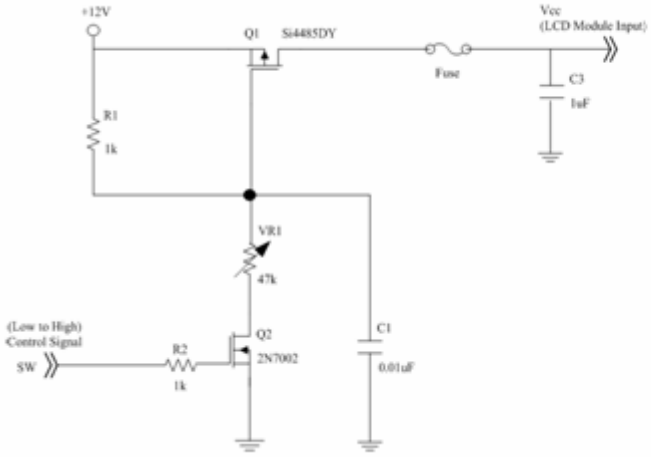
4.3.1 LCD ELETRONICS SPECIFICATION

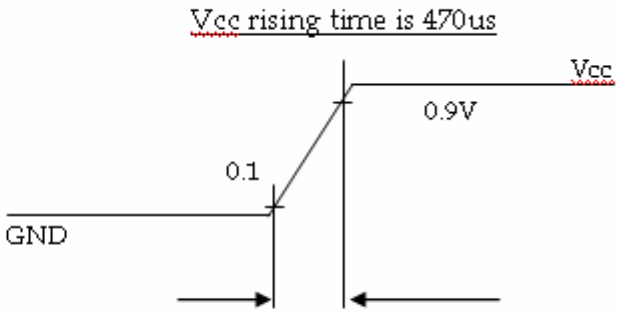
(Ta = 25 ± 2 ºC).

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
Power Supply Voltage		V_{CC}	10.8	12	13.2	V	(1)
Rush Current		I_{RUSH}	—	—	2.6	A	(2)
Power Consumption	White Pattern	P_T	—	8.44	9.28	W	(3)
	Black Pattern	P_T	—	7.85	8.63	W	
	Horizontal Stripe	P_T	—	14.66	16.12	W	
Power Supply Current	White Pattern	—	—	0.73	0.88	A	(3)
	Black Pattern	—	—	0.68	0.82	A	
	Horizontal Stripe	—	—	1.26	1.53	A	
VbyOne HS	Differential Input High Threshold Voltage	VLVTH	—	—	+50	mV	
	Differential Input Low Threshold Voltage	VLVTL	-50	—	—	mV	
	Differential Input Resistor	RRIN	80	100	120	ohm	
CMOS interface	Input High Threshold Voltage	VIH	2.7	—	3.3	V	
	Input Low Threshold Voltage	VIL	0	—	0.7	V	

Note (1) The module should be always operated within the above ranges. The ripple voltage should be controlled under 10 % of Vcc (Typ.)

Note (2) Measurement Conditions:





Note (3) The specified power supply current is under the conditions at Vcc = 12 V, Ta = 25 ± 2 ºC, Fr = 60Hz, whereas a power dissipation check pattern below is displayed.

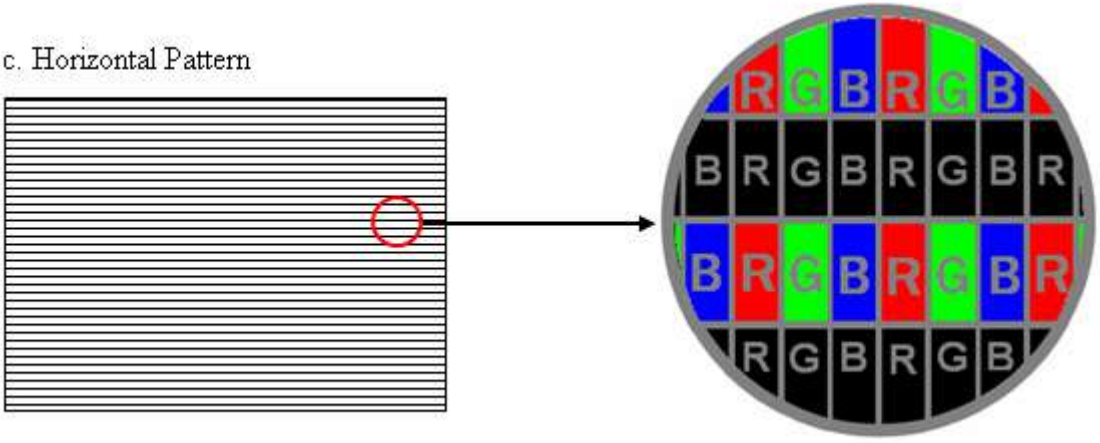
a. White Pattern

Active Area

b. Black Pattern

Active Area

c. Horizontal Pattern



Note (4) The surface temperature of T-CON must be lower than 70℃

4.4 V BY ONE INPUT SIGNAL SPECIFICATIONS

4.4.1 V BY ONE DATA MAPPING TABLE

Lan	Data Stream
Lan 0	1, 9, 17, ..., 3825, 3833
Lan 1	2, 10, 18, ..., 3826, 3834
Lan 2	3, 11, 19, ..., 3827, 3835
Lan 3	4, 12, 20, ..., 3828, 3836
Lan 4	5, 13, 21, ..., 3829, 3837
Lan 5	6, 14, 22, ..., 3830, 3838
Lan 6	7, 15, 23, ..., 3831, 3839
Lan 7	8, 16, 24, ..., 3832, 3840

4.4.2 COLOR DATA INPUT ASSIGNMENT

The brightness of each primary color (red, green and blue) is based on the 10-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											
		R9	R8	G7	G6	R5	R4	R3	R2	R1	R0	G9	G8	G7	G6	G5	G4	G3	G2	G1	G0	B9	B8	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	0	0	0	0	0	0	0	0
	Red	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	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	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	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	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	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	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1	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	1	1	1	1	0	0	0	0	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	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	0	0	0	0	0	0	0	0
	Red(1)	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(2)	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	Red(1021)	1	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(1022)	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(1023)	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	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	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	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Green(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	Green(1021)	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Green(1022)	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green(1023)	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	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	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	0	0	0	0	0	0	1	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	0	0	0	0	0	0	1	0	1	0
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	Blue(1021)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	1	0	1
	Blue(1022)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	1	0
	Blue(1023)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1

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

4.5 DISPLAY TIMING SPECIFICATIONS

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

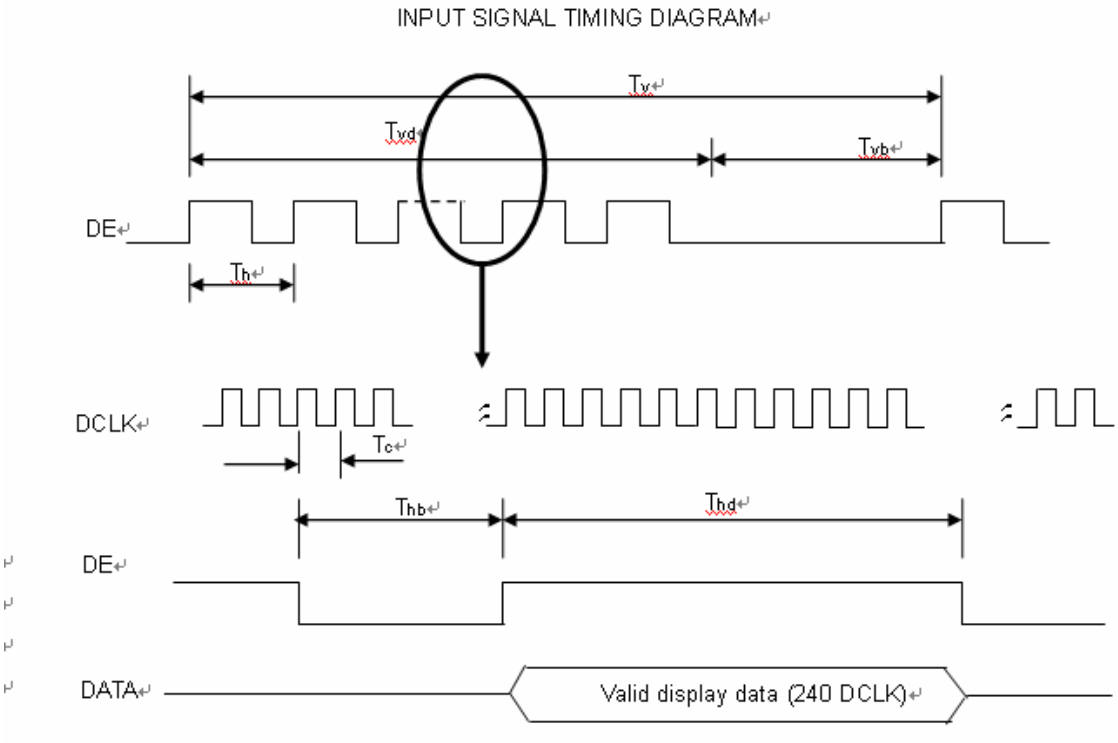
Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
V by One	Frequency	Fc	70	74.25	80	MHz	(1)
	Intra-Pair skew		-0.3	-	0.3	UI	(2)
	Inter-Pair skew		-5	-	5	UI	(3)
	Spread spectrum modulation range	Fclkin_mod	F_{clkin}-0.5%	-	F_{clkin}+0.5 %	MHz	(4)
	Spread spectrum modulation frequency	F_{SSM}	-	-	30	KHz	
Vertical Display Term	Frame Rate	Fr	57.5	60	62.5	Hz	(5)(6)
	Total	Tv	2200	2250	2790	Th	Tv=Tvd+Tvb
	Active Display	Tvd	2160	2160	2160	Th	-
	Blank	Tvb	40	90	630	Th	-
Horizontal Display Term	Total	Th	530	550	570	Tc	Th=Thd+Thb
	Active Display	Thd	480	480	480	Tc	-
	Blank	Thb	50	70	90	Tc	-

Note (1) Please make sure the range of pixel clock has follow the below equation:

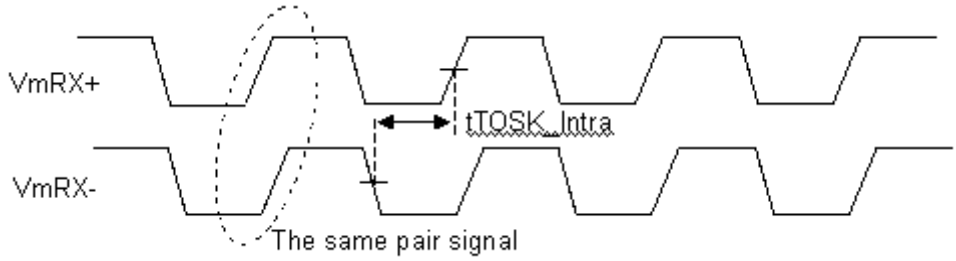
Fclkin(max) ≧ Fr × Tv × Th

Fr × Tv × Th ≧ Fclkin (min)

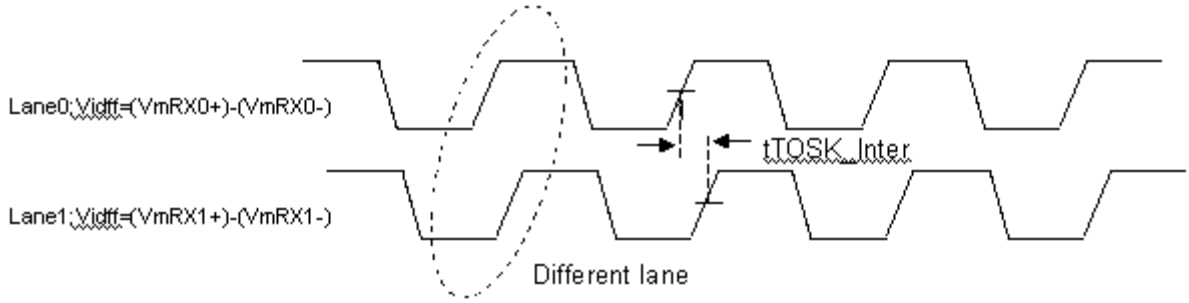
INPUT SIGNAL TIMING DIAGRAM



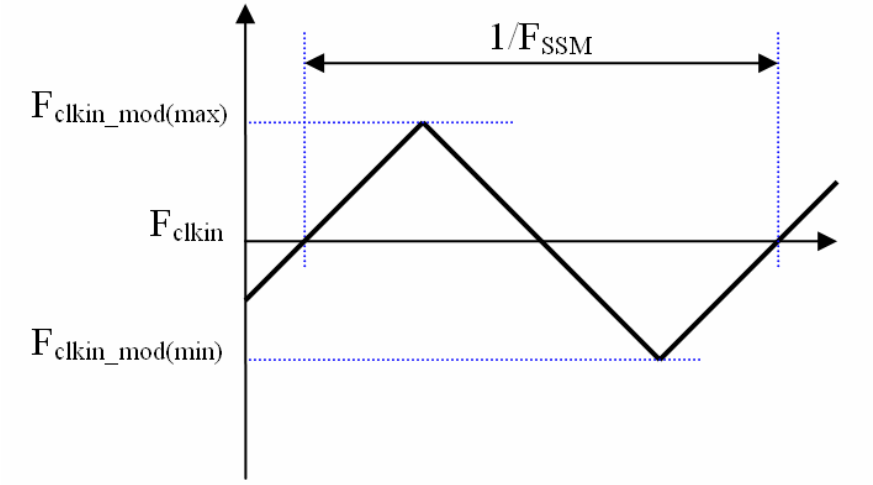
Note (2) V-by-One HS Intra-pair skew



Note (3) V-by-One HS Inter-pair skew

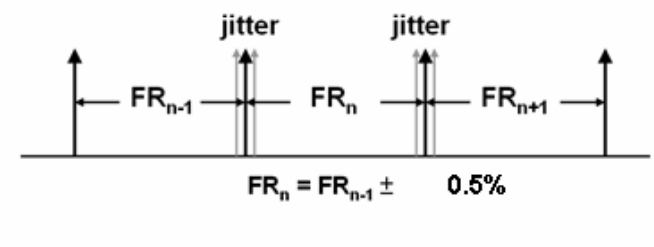


Note (4) The SSCG (Spread spectrum clock generator) is defined as below figures.



Note (5) The frame-to-frame jitter of the input frame rate is defined as the above figures. FRn = FRn-1 ± 0.5%.

Note (6) The setup of the frame rate jitter > 0.5% may result in the cosmetic LED backlight symptom and the electric function is affected.



4.6 V BY ONE INPUT SIGNAL TIMING DIAGRAM

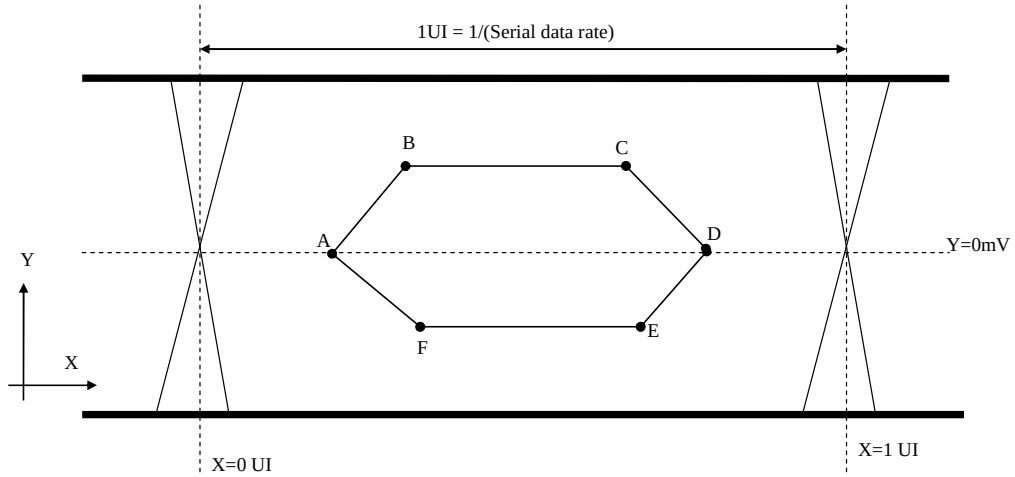


Table 1 Eye Mask Specification

	X [UI]	Y [mV]	Note
A	0.25	0	(1)
B	0.3	50	(1)
C	0.7	50	(1)
D	0.75	0	(1)
E	0.7	-50	(1)
F	0.3	-50	(1)

Note (1) Input levels of V-by-One HS signals are comes from “V-by-One HS Stander Ver.1.4”

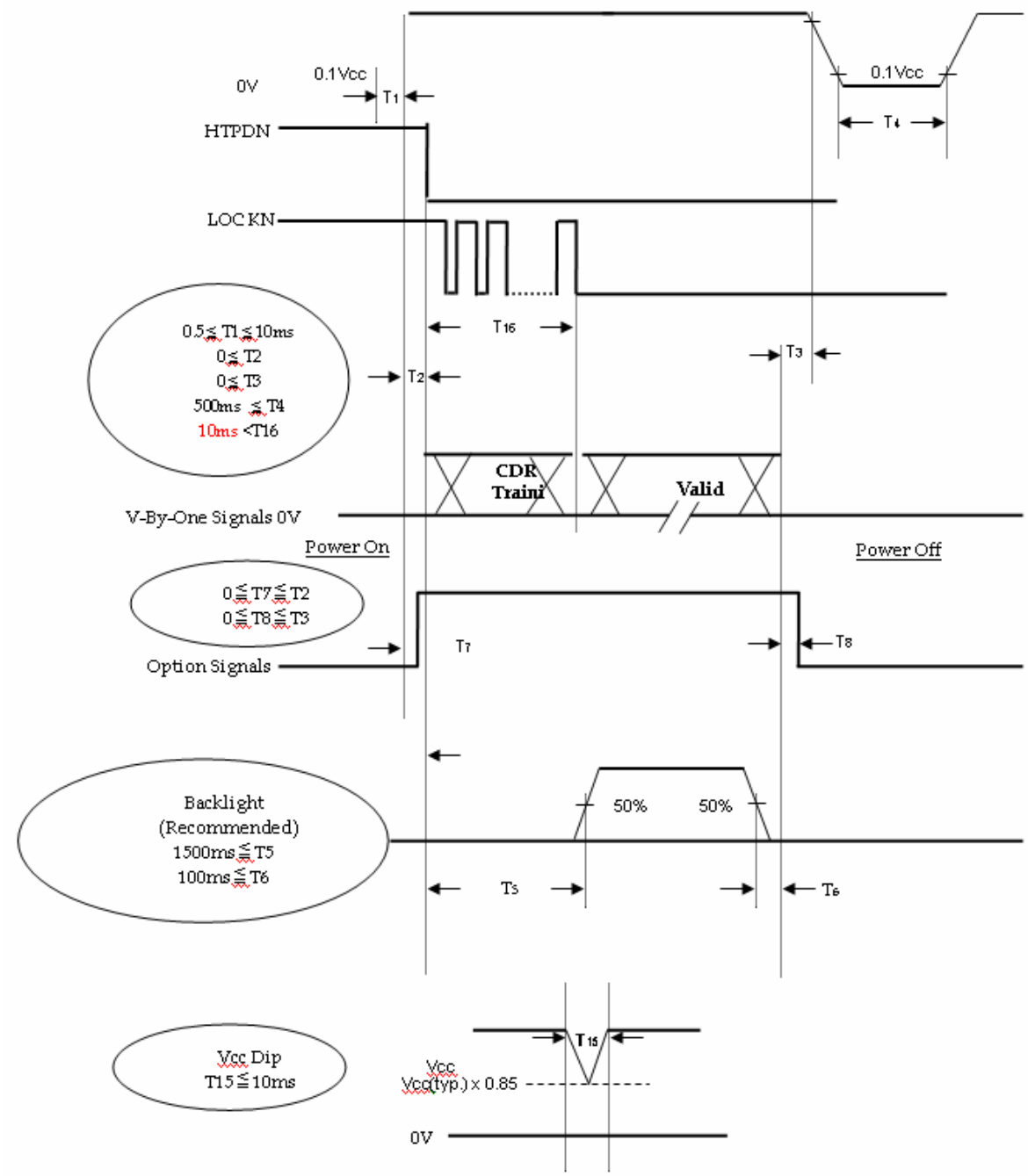
4.7 BYTE LENGTH AND COLOR MAPPING OF V-BY-ONE HS

Packer input & Unpacker output		30bpp RGB (10bit)
Byte 0	D[0]	R[2]
	D[1]	R[3]
	D[2]	R[4]
	D[3]	R[5]
	D[4]	R[6]
	D[5]	R[7]
	D[6]	R[8]
	D[7]	R[9]
Byte 1	D[8]	G[2]
	D[9]	G[3]
	D[10]	G[4]
	D[11]	G[5]
	D[12]	G[6]
	D[13]	G[7]
	D[14]	G[8]
	D[15]	G[9]
Byte 2	D[16]	B[2]
	D[17]	B[3]
	D[18]	B[4]
	D[19]	B[5]
	D[20]	B[6]
	D[21]	B[7]
	D[22]	B[8]
	D[23]	B[9]
Byte 3	D[24]	X
	D[25]	X
	D[26]	B[0]
	D[27]	B[1]
	D[28]	G[0]
	D[29]	G[1]
	D[30]	R[0]
	D[31]	R[1]

4.8 POWER ON/OFF SEQUENCE

(Ta = 25 ± 2 ºC)

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



Note (1) The supply voltage of the external system for the module input should follow the definition of Vcc.

Note (2) Apply the LED voltage within the LCD operation range. When the backlight turns on before the LCD operation or the LCD turns off before the backlight turns off, the display may momentarily become abnormal screen..

Note (3) In case of Vcc is in off level, please keep the level of input signals on the low or high impedance. If T2<0,that maybe cause electrical overstress failure.

Note (4) T4 should be measured after the module has been fully discharged between power off and on period..

Note (5) Interface signal shall not be kept at high impedance when the power is on

Note (6) Vcc must decay smoothly when power-off

5. OPTICAL CHARACTERISTICS

5.1 TEST CONDITIONS

Item	Symbol	Value	Unit
Ambient Temperature	Ta	25±2	oC
Ambient Humidity	Ha	50±10	%RH
Supply Voltage	VCC	12	V
Input Signal	According to typical value in "3. ELECTRICAL CHARACTERISTICS"		

5.2 OPTICAL SPECIFICATIONS

The relative measurement methods of optical characteristics are shown in 5.2. The following items should be measured under the test conditions described in 5.1 and stable environment shown in Note 5.1.

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Color Chromaticity (CIE 1931)	Red	Rcx	θ_x=0°, θ_Y =0° Viewing angle At normal direction Standard light source "C"	Typ – 0.03	0.667	Typ + 0.03	-	(1)
		Rcy			0.318			
	Green	Gcx			0.264			
		Gcy			0.616			
	Blue	Bcx			0.136			
		Bcy			0.092			
	White	Wcx			0.304			
		Wcy			0.353			
Transmittance		T%	θ_x=0°, θ_Y =0° With INX Module@60Hz		2.71		%	(6)
Transmittance Variation		δT				1.42		(7)
Contrast Ratio		CR		2000	3000	-	-	(2), (4)
Response Time		$T_{GtG\_AVE\_}$		-	9.5	20	ms	(2), (5)
Viewing Angle	Horizontal	x +	CR ≧ 10 With INX Module	80	89	-	Deg.	(2), (3)
		x -		80	89	-		
Viewing Angle	Vertical	y +		80	89	---		
		y -		80	89	---		

Note (1) Light source is the standard light source "C" which is defined by CIE and driving voltage are based on suitable gamma voltages. The calculating method is as following：

1.Measure Module's and BLU's spectrum at center point. W, R,G, B are with signal input. BLU(M315DJJ-Q01) is supplied by INX.

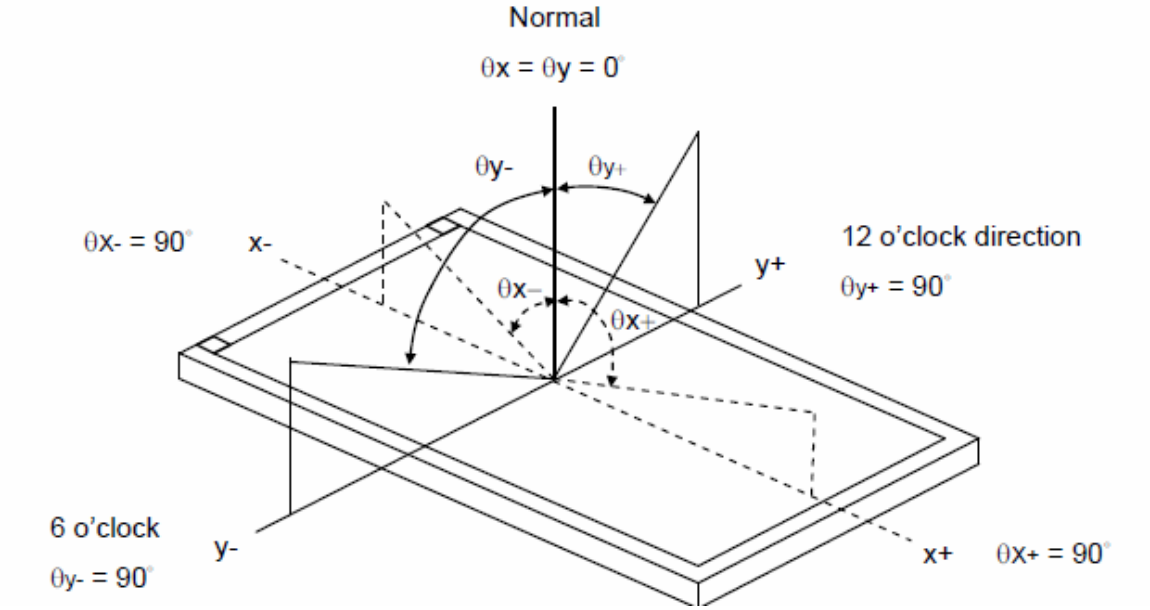
2.Calculate cell's spectrum.

3.Calculate cell's chromaticity by using the spectrum of standard light source "C".

Note (2) Light source is the BLU which supplied by INX (M315DJJ-Q01) and the cell driving voltage are based on suitable gamma voltages.

Note (3) Definition of Viewing Angle (θx, θy):

Viewing angles are measured by Autronic Conoscope Cono-80



Note (4) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

Contrast Ratio (CR) = L255 / L0

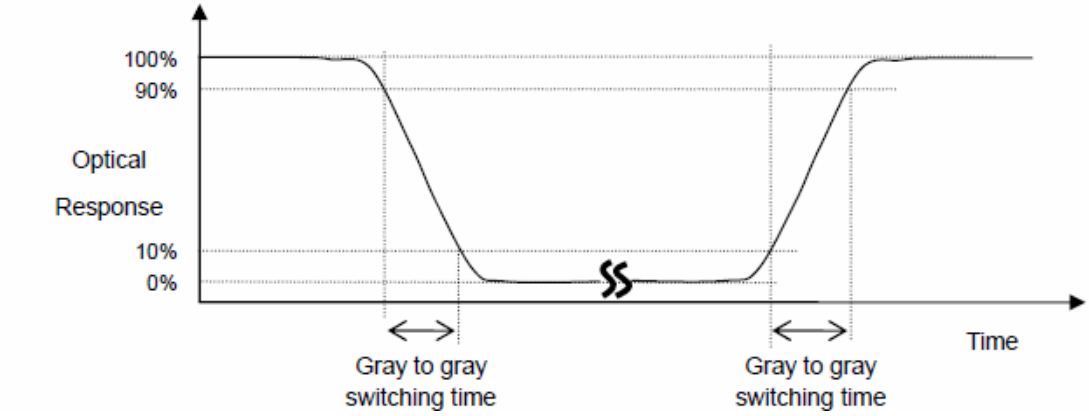
$$\text{Contrast Ratio (CR)} = \frac{\text{Surface Luminance of L255}}{\text{Surface Luminance of L0}}$$

L255: Luminance of gray level 255

L 0: Luminance of gray level 0

CR = CR (5), where CR (X) is corresponding to the Contrast Ratio of the point X at the figure in Note (7).

Note (5) Definition of Gray-to-Gray Switching Time:



The driving signal means the signal of gray level 0, 31, 63, 95, 127, 159, 191, 223 and 255..

Gray to gray average time means the average switching time of gray level 0, 31, 63, 95, 127, 159, 191, 223 and 255 to each other.

Note (6) Definition of Transmittance (T%) :

Measure the transmittance at 5 points.

Light source is the BLU(V315B5-LE3) and the cell driving voltage are based on suitable gamma voltages.

Transmittance (T%) = Average [T(1), T(2), T(3), T(4), T(5)]

The transmittance of each point can be calculated by the following expression.

$$T(X) = \frac{\text{L255 (X) of LCDmodule}}{\text{Luminance (X) of BLU}} \times 100\%$$

L255: Luminance of gray level 255

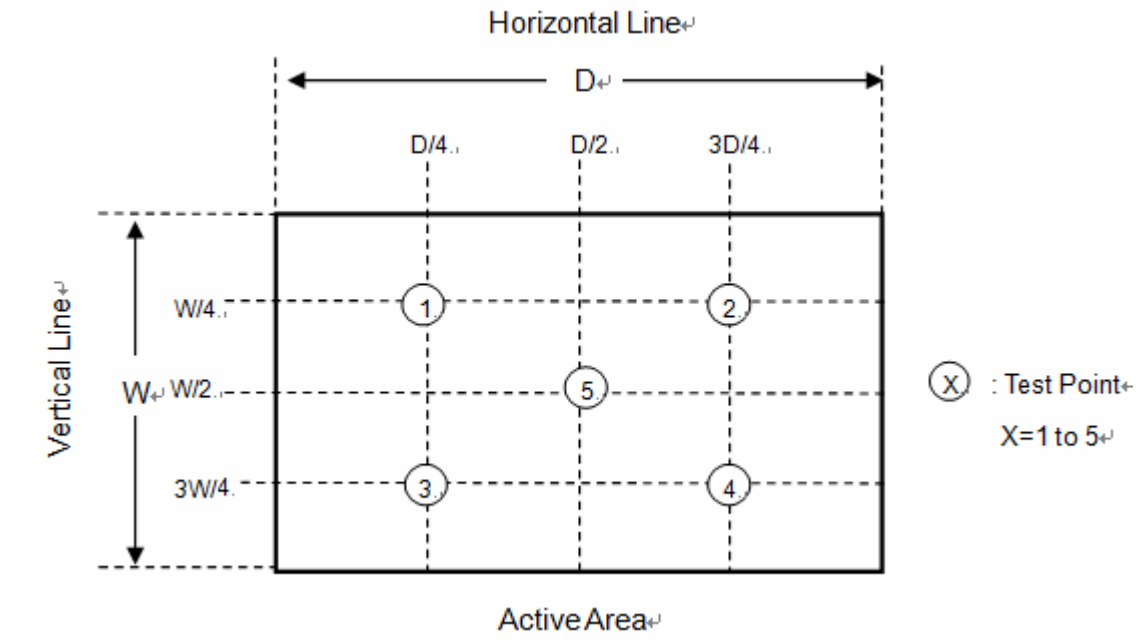
T(X) is corresponding to the point X1~X5 at the figure in Note (7).

Note (7) Definition of Transmittance Variation (δT):

Measure the Transmittance at 5 points

$$\text{Transmittance Variation } (\delta T) = \frac{\text{Maximum } [T(1), T(2), T(3), T(4), T(5)]}{\text{Minimum } [T(1), T(2), T(3), T(4), T(5)]}$$

T(X) is calculated as Note(6).



6. RELIABILITY TEST ITEM

Items	Required Condition	Note
Temperature Humidity Bias (THB)	Ta= 50℃, 80%RH, 240hours	(1)
High Temperature Operation (HTO)	Ta= 50℃, 240hours	
Low Temperature Operation (LTO)	Ta= 0℃, 240hours	
High Temperature Storage (HTS)	Ta= 60℃, 240hours	
Low Temperature Storage (LTS)	Ta= -20℃, 240hours	
Package Vibration Test	ISTA STANDARD 1.14Grms Random, Frequency Range: 1 ~ 200 Hz Top & Bottom: 30 minutes (+Z), 10 min (-Z), Right & Left: 10 minutes (X) Back & Forth 10 minutes (Y)	(2)
Thermal Shock Test (TST)	-20℃/30min, 60℃ / 30min, 100 cycles	(1)
On/Off Test	25℃, On/10sec, Off /10sec, 30000 cycles	
Altitude Test	Operation: 10000 ft / 24hours Non-Operation: 30000 ft / 24hours	

Note (1) The tests are done with LCD modules.

Note (2) The test is done with a package shown in Section 8

7. LABEL

7.1 INX OPEN CELL LABEL

Barcode definition:

Serial ID: CM-V5J01-X-X-X-XX-L-XX-L-YMD-NNNN

Code	Meaning	Description
CM	Supplier code	INX =CM
V5J01	Model number	M315DJJ-Q01= V5J01
X	Revision code	C1:1, C2:2, …
X	Source driver IC code	Century=1, CLL=2, Demos=3, Epson=4, Fujitsu=5, Himax=6, Hitachi=7, Hynix=8, LDI=9, Matsushita=A, NEC=B, Novatek=C, OKI=D, Philips=E, Renasas=F, Samsung=G, Sanyo=H, Sharp=I, TI=J, Topro=K, Toshiba=L, Windbond=M ILITEK=Q, Fiti=Y, None IC =Z
X	Gate driver IC code	
XX	Cell location	Tainan, Taiwan=TN Ningbo China=CN, Hsinchu Taiwan=SC
L	Cell line #	1,2,~,9,A,B,~,Y,Z
XX	Module location	Tainan, Taiwan=TN ; Ningbo China=NP, Shenzhen China=SH
L	Module line #	1,2,~,9,A,B,~,Y,Z
YMD	Year, month, day	Year: 2001=1, 2002=2, 2003=3, 2004=4… Month: 1~12=1, 2, 3, ~, 9, A, B, C Day: 1~31= 1, 2, 3, ~, 9, A, B, C, ~, T, U, V
NNNN	Serial number	Manufacturing sequence of product

8. PACKING

8.1 PACKAGING SPECIFICATIONS

(1)9 PCS LCD Panels / 1 Box

(2)Box dimensions : 810 (L) X 555 (W) X93 (H)mm

(3)Weight : approximately 11.7 Kg

(4)234 PCS LCD TV Panels / 1 Group

8.2 PACKAGING METHOD

Packing method (Hard Box) is shown in following figures.

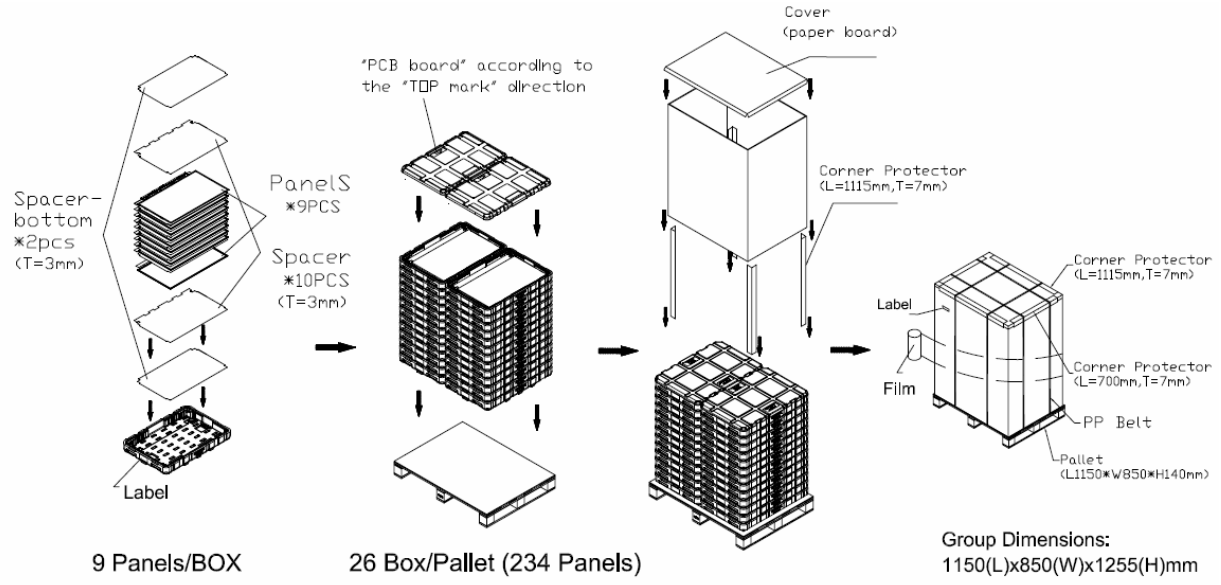


Figure.8-1 packing method

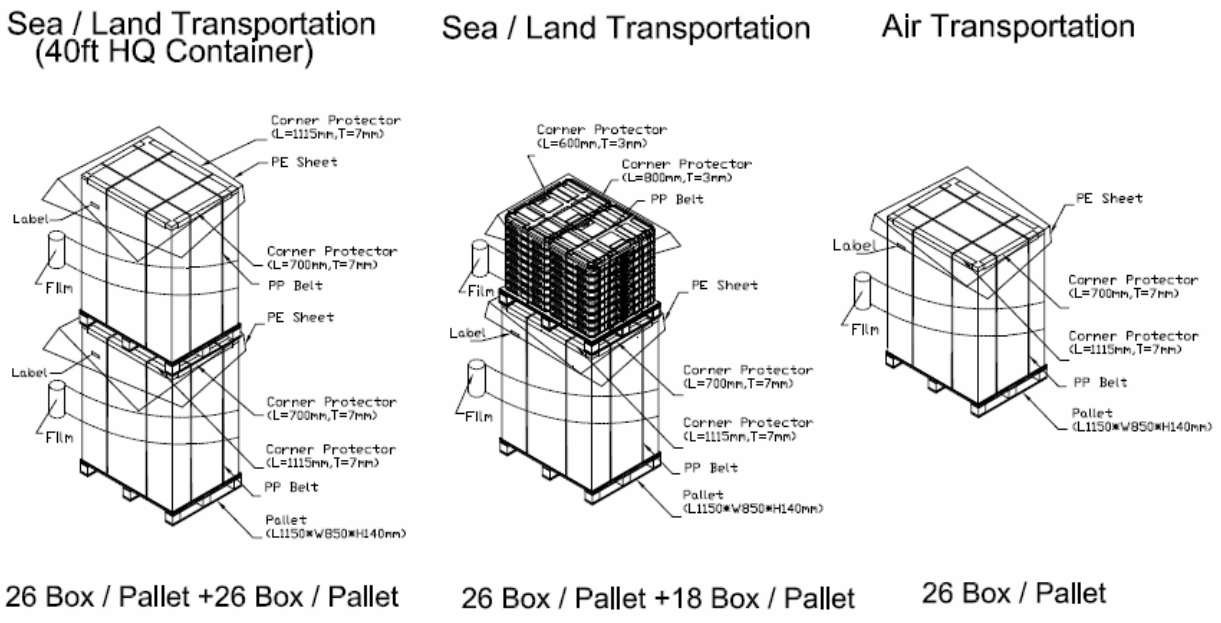


Figure.8-2 packing method

8.3 PACKAGING METHOD

Without the outer Carton, Boxes stack under the package architecture

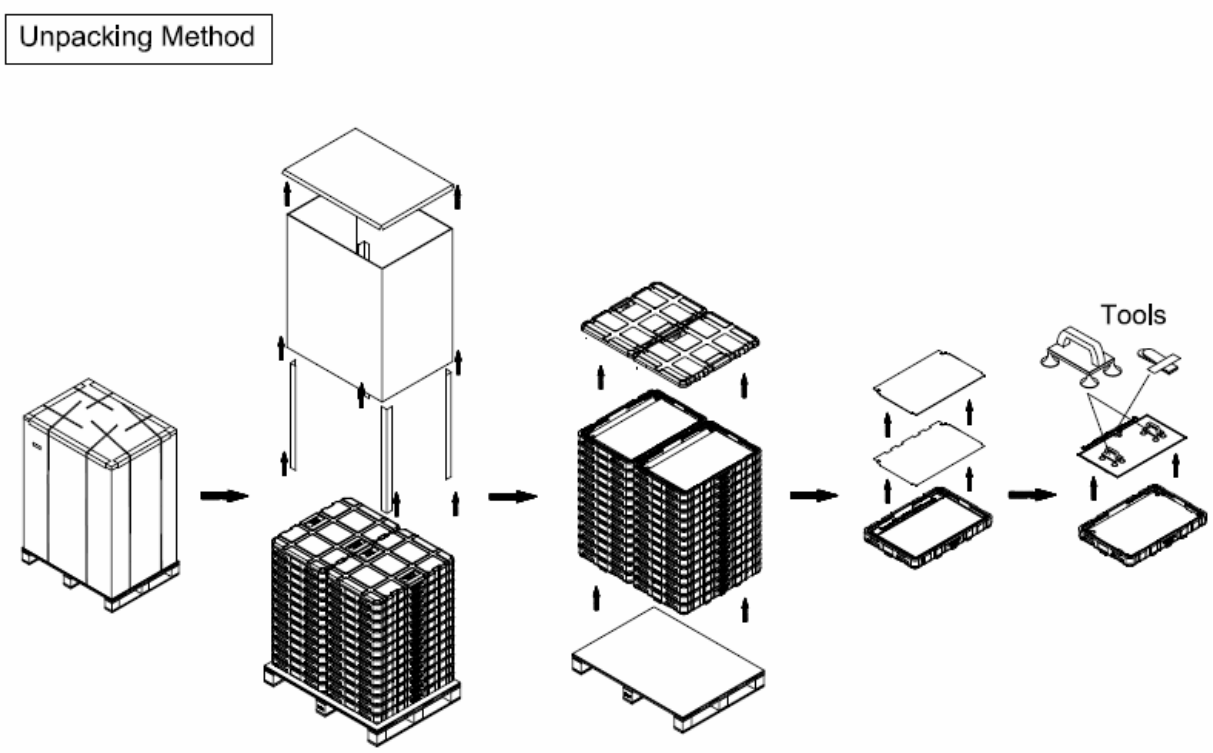


Figure.8-3 Un-packing method

9. PRECAUTION

9.1 ASSEMBLY AND HANDLING PRECAUTIONS

(1) Do not apply rough force such as bending or twisting to the module during assembly.

(2) To assemble or install module into user's system can be only in clean working areas. The dust and oil may cause electrical short or worsen the polarizer.

(3) It's not permitted to have pressure or impulse on the module because the LCD panel and Backlight will be damaged.

(4) Always follow the correct power sequence when LCD module is connecting and operating. This can prevent damage to the CMOS LSI chips during latch-up.

(5) Do not pull the I/F connector in or out while the module is operating.

(6) Do not disassemble the module.

(7) Use a soft dry cloth without chemicals for cleaning, because the surface of polarizer is very soft and easily scratched.

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

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

(10)When ambient temperature is lower than 10ºC may reduce the display quality. For example, the response time will become slowly.

(11) While touching the panel surface under the patterns with higher grey levels, a shadow or mura phenomenon would be seen. This phenomenon is totally recoverable by switching the patterns to lower grey levels. It is a product feature.

9.2 STORAGE PRECAUTIONS

(1) Do not leave the module in high temperature, and high humidity for a long time. It is highly recommended to store the module with temperature from 0℃ to 35℃ and relative humidity of less than 70%

(2) Do not store the TFT – LCD module in direct sunlight

(3) The module should be stored in dark place. It is prohibited to apply sunlight or fluorescent light in storing

9.3 OPERATION PRECAUTIONS

(1) The LCD product should be operated under normal condition.

Normal condition is defined as below :

Temperature : 20±15℃

Humidity: 65±20%

Display pattern : continually changing pattern(Not stationary)

(2) If the product will be used in extreme conditions such as high temperature, high humidity, high altitude ,display pattern or operation time etc…It is strongly recommended to contact INX for application engineering advice . Otherwise, its reliability and function may not be guaranteed.

9.4 SAFETY PRECAUTIONS

(1) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, skin or clothes, it has to be washed away thoroughly with soap.

(2) After the module's end of life, it is not harmful in case of normal operation and storage.

9.5 SAFETY STANDARDS

The LCD module should be certified with safety regulations as follows:

(1) UL60950-1 or updated standard.

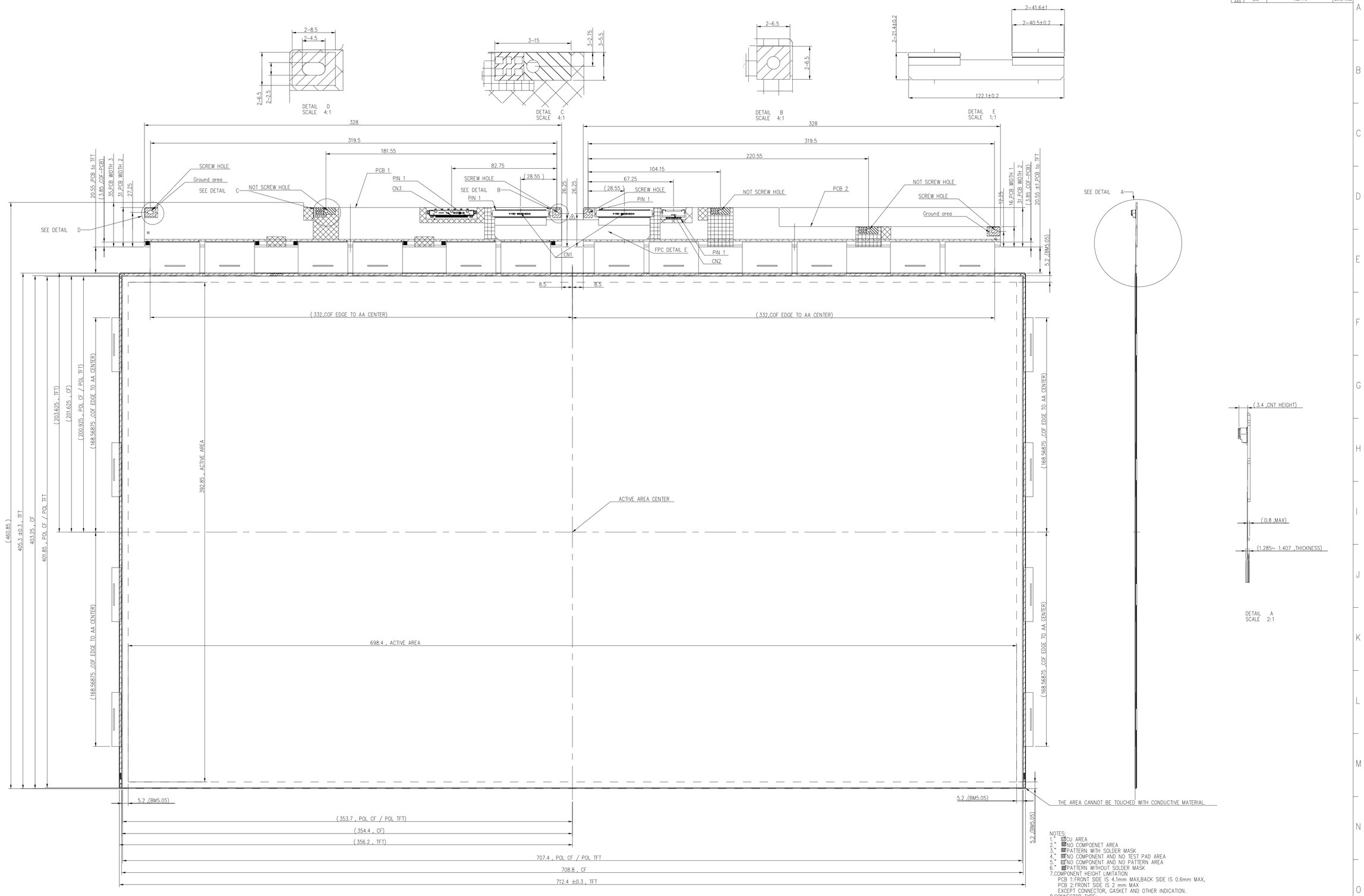
(2) IEC60950-1 or updated standard.

9.6 OTHER

When fixed patterns are displayed for a long time, remnant image is likely to occur.

Appendix. OUTLINE DRAWING

REV	EC NUMBER	DESCRIPTION	DATE
1		First Release	2015/01/05
2	ER0093251	Modify Horizontal Axis	2015/03/05
3	EA0	Add FPC	2016/11/22



NOTES:
1." ▨"CU AREA
2." ▩"NO COMPOENET AREA
3." ▨"PATTERN WITH SOLDER MASK
4." ▩"NO COMPONENT AND NO TEST PAD AREA
5." ▩"NO COMPONENT AND NO PATTERN AREA
6." ▨"PATTERN WITHOUT SOLDER MASK
7.COMPONENT HEIGHT LIMITATION
PCB 1:FRONT SIDE IS 4.1mm MAX,BACK SIDE IS 0.6mm MAX,
PCB 2:FRONT SIDE IS 2 mm MAX
EXCEPT CONNECTOR, GASKET AND OTHER INDICATION.
8.CONNECTOR TYPE:
CN1: P-TWO 196225-80041
CN2: LINE LM123S01QHTF13Y
CN3: P-TWO 187059-51221
9."NOT SCREW HOLE" IS ONLY FOR PCBA SMT MANUFACTURE,NOT FOR SCREW FIXED.
10.THE SCREW HEAD DIAMETER MUST BE SMALLER THAN THE SCREW HOLES GROUND PAD OUTLINE 1 MM MIN.
11.EACH SIDE OF CONTACT AREA OUTLINE ON PCBA WHICH TOUCHED BY METAL MATERIALS FROM INTEGRATED-SYSTEM COMPANY MUSTFOLLOW LESS 2MM(MIN) THAN GROUND PAD OUTLINE OF PCBA'S SCREW HOLES.
11." ▨ THE AREA CANNOT BE TOUCHED WITH CONDUCTIVE MATERIAL.

☑ DESIGN DIMENSION	☑ CONTROL DIMENSION	DATE 2016/11/22	SCALE 1:1
APPROVED	Kebiao Shi	PART NUMBER or PDL NUMBER	DRAWING NO. 02
CHECKED	Joy Guo	PART DESCRIPTION www.panel_NT37501-K30_sc_sec	PART NUMBER 1/2
DESIGNED	Min01 Lin	INNOLUX	SIZE A0