



PROPRIETARY NOTE

THIS SPECIFICATION IS THE PROPERTY OF BOE DT AND SHALL NOT BE REPRODUCED OR COPIED WITHOUT THE WRITTEN PERMISSION OF BOE DT AND MUST BE RETURNED TO BOE DT UPON ITS REQUEST

TITLE: DV550FHM-NN1
Product Specification
Rev. A

BEIJING BOE DISPLAY TECHNOLOGY

SPEC. NUMBER
S8-64-8A-182

PRODUCT GROUP
TFT-LCD

REV.
A

ISSUE DATE
2018.12.20

PAGE
1 OF 32

Contents

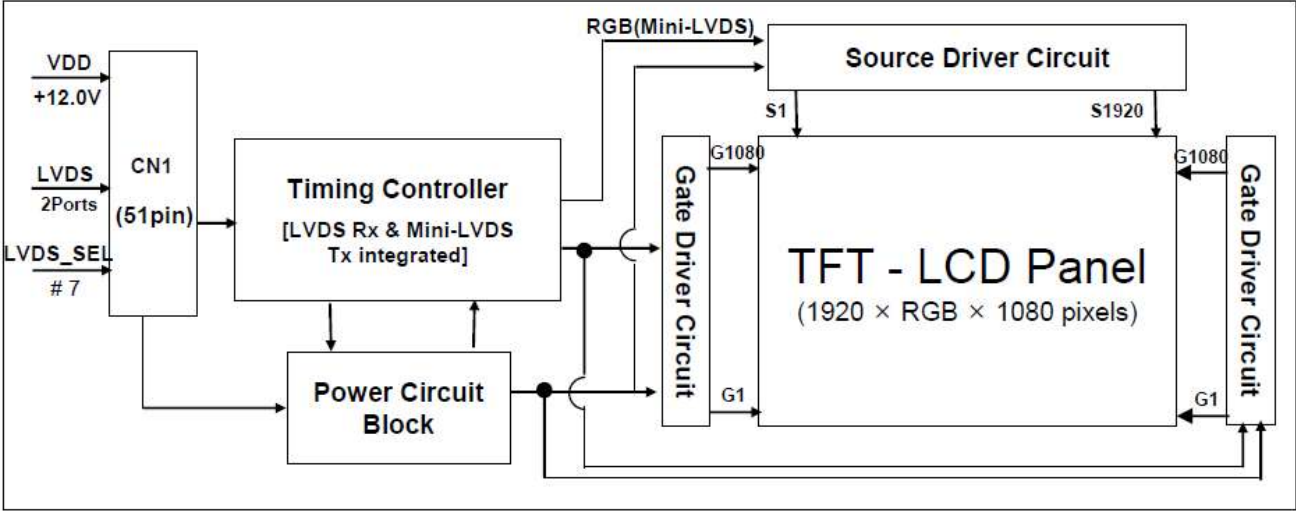
No	ITEM	Page
	REVISIONS HISTORY	2
	CONTENTS	3
1	GENERAL DESCRIPTION	4
	1.1 Introduction	
	1.2 Features	
	1.3 Applications	
	1.4 General Specification	
2	ABSOLUTE MAXIMUM RATINGS	6
3	ELECTRICAL SPECIFICATIONS	8
	3.1 TFT LCD Module	
	3.2 Interface Connections	
	3.3 Backlight Unit	
	3.4 LED Constant Current Source LED	
	3.5 LVDS Interface	
	3.6 LVDS Rx Interface Timing Parameter	
	3.7 Signal Timing Specifications	
	3.6 Signal Timing Waveform	
	3.8 Color Data Input Assignment	
	3.9 Power Sequence	
4	OPTICAL SPECIFICATIONS	20
	4.1 Test Conditions	
	4.2 Optical Specifications	
5	MECHANICAL CHARACTERISTICS	24
6	RELIABILITY	25
7	PRODUCT SERIAL NUMBER	26
8	PACKING INFORMATION	27
9	HANDING & CAUTIONS	30
10	MECHANICAL CHARACTERISTICS	31

BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT-LCD	A	2018.12.20

1.0 GENERAL DESCRIPTION

1.1 Introduction

DV550FHM-NN1 is a color active matrix TFT LCD MDL using amorphous silicon TFT's (Thin Film Transistors) as an active switching devices. This MDL has a 55 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 MDL can display 16.7M colors. The TFT-LCD panel used for this MDL is adapted for a low reflection and higher color type.



1.2 Features

- LVDS interface with 2 pixel / clock
- High-speed response
- Low color shift image quality
- 8-bit color depth, display 16.7M colors
- High luminance and contrast ratio, low reflection and wide viewing angle
- DE (Data Enable) only mode
- ADSDS technology is applied for high display quality
- RoHS compliant

SPEC. NUMBER S8-64-8A-182	SPEC. TITLE DV550FHM-NN1 Product Specification	PAGE 4 OF 32
------------------------------	---	-----------------

1.3 Application

- Home Alone Multimedia TFT-LCD TV
- Display Terminals for Control System
- High Definition TV(FHD TV)
- AV application Products

1.4 General Specification

< Table 1. General Specifications >

Parameter	Specification	Unit	Remark
Active area	1209.6(H) × 680.4(V)	mm	
Number of pixels	1920(H)×1080(V)	pixels	
Pixel pitch	630(H)×RGB×630(V)	μm	
Pixel arrangement	Pixels RGB Vertical stripe		
Display colors	16.7M(8bits-true)	colors	
Display mode	Transmission mode, Normally Black		
Open Cell Transmittance	5.8 (Typ.)	%	At center point with BOE BLU
Weight	15(Typ)	Kg	
Power Consumption	85.5	Watt	
Surface Treatment	Haze 1%,3H (Front Polarizer)		

2.0 ABSOLUTE MAXIMUM RATINGS

2.1 ABSOLUTE RATINGS OF ENVIRONMENT

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.

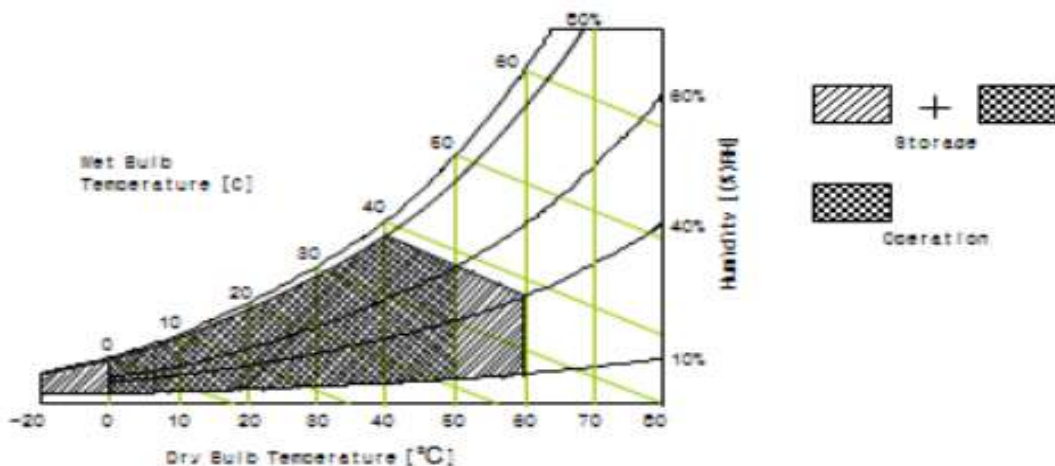
< Table 2. Open Cell Electrical Specifications >

[VSS=GND=0V]

Parameter	Symbol	Min.	Max.	Unit	Remark
Power Supply Voltage	VDD	VSS-0.3	13.5	V	Ta = 25 °C
Operating Temperature	T _{OP}	0	+50	°C	Note 1
	T _{SUR}	0	+60	°C	
Storage Temperature	T _{ST}	-20	+60	°C	
Operating Ambient Humidity	Hop	10	80	%RH	
Storage Humidity	Hst	10	80	%RH	

Note 1 : Temperature and relative humidity range are shown in the figure below.

Wet bulb temperature should be 39 °C max. and no condensation of water.



2.2 ABSOLUTE RATINGS OF ENVIRONMENT

When storing modules as spares for a long time, the following precaution is necessary.

- 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 20 to 25°C at and $50 \pm 10\%$ RH.
- The module shall be stored in dark place. Do not store the TFT-LCD module in direct sunlight or fluorescent light.

2.3 ELECTRICAL ABSOLUTE RATINGS

< Table 3. Electrical Absolute Ratings(Open Cell) >

Item	Symbol	Value		Unit	Note
		Min	Max		
Power Supply Voltage	VDD	VSS-0.3	13.5	V	(1)
Logic Input Voltage	Vin	-0.3	3.6	V	

< Table 4 Backlight Unit >

Item	Symbol	Value			Unit	Note
		Min.	Typ	Max.		
LED DC forward current	If	450	480	500	mA	
LED peak pulse	Ip	-		-	mA	
LED Reverse voltage	Vr	2.9	3.2	3.4	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.

3.0 ELECTRICAL CHARACTERISTICS

3.1 TFT LCD MOUDLE

< Table 5. Open Cell Electrical Specifications >

[Ta =25±2 °C]

Parameter		Symbol	Values			Unit	Remark
			Min	Typ	Max		
Power Supply Input Voltage		VDD	10.8	12	13.2	Vdc	
Power Supply Ripple Voltage		VRP			300	mV	
Power Supply Current		IDD	-	460	750	mA	Note 1
Power Consumption		PDD		5.5	8	Watt	
Rush current		IRUSH	-	4		A	Note 2
LVDS Interface	Differential Input High Threshold Voltage	VLVTH	+100		+300	mV	
	Differential Input Low Threshold Voltage	VLVTL	-300		-100	mV	
	Common Input Voltage	VLVC	1.0	1.2	1.4	V	
CMOS Interface	Input High Threshold Voltage	VIH	2.7	-	3.3	V	
	Input Low Threshold Voltage	VIL	0	-	0.6	V	

Note 1 : The supply voltage is measured and specified at the interface connector of LCM.

The current draw and power consumption specified is for VDD=12.0V,

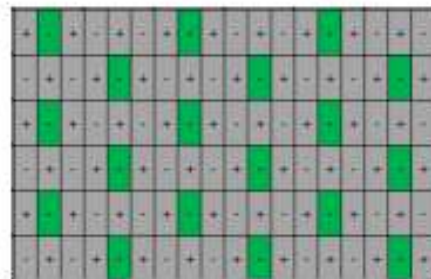
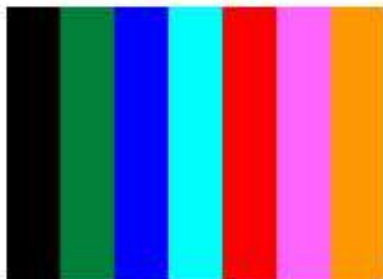
Frame rate $f_v=60\text{Hz}$ and Clock frequency = 75.4MHz.

Note 2 : Test Pattern of power supply current& Flicker test Pattern

a) Typ : Color Test (L0/L255)

b) Max : Horizontal 1 Line (L0/L255)

c) Flicker test Pattern(L0/Green127)



Note 2 : The duration of rush current is about 2ms and rising time of Power Input is 1ms(min)

3.2 INTERFACE CONNECTIONS

3.2.1 LCD MODULE

- Connector : IS050-C51B-C39-S (UJU) / FI-RE51S-HF-R1500 (JAE) or Equivalent.

< Table 6. Open Input Connector Pin Configuration >

Pin No	Symbol	Description	Pin No	Symbol	Description
1	NC	No Connection	21	GND	Ground
2	SDA	I ² C Data	22	CH1[3]-	First pixel negative LVDS differential data input. Pair3
3	SCL	I ² C Clock	23	CH1[3]+	First pixel positive LVDS differential data input. Pair3
4	NC	Not Connected	24	CH1[4]-/NC	First pixel negative LVDS differential data input. Pair4
5	NC	Not Connected	25	CH1[4]+/NC	First pixel positive LVDS differential data input. Pair4
6	NC	Not Connected	26	NC	Not Connected
7	SELLVDS	High : JEIDA Low or Open: NS	27	NC	Not Connected
8	NC	Not Connected	28	CH2[0]-	Second pixel negative LVDS differential data input. Pair0
9	NC	Not Connected	29	CH2[0]+	Second pixel positive LVDS differential data input. Pair0
10	NC	Not Connected	30	CH2[1]-	Second pixel negative LVDS differential data input. Pair1
11	GND	Ground	31	CH2[1]+	Second pixel positive LVDS differential data input. Pair1
12	CH1[0]-	First pixel negative LVDS differential data input. Pair0	32	CH2[2]-	Second pixel negative LVDS differential data input. Pair2
13	CH1[0]+	First pixel positive LVDS differential data input. Pair0	33	CH2[2]+	Second pixel positive LVDS differential data input. Pair2
14	CH1[1]-	First pixel negative LVDS differential data input. Pair1	34	GND	Ground
15	CH1[1]+	First pixel positive LVDS differential data input. Pair1	35	CH2CLK-	First pixel negative LVDS clock
16	CH1[2]-	First pixel negative LVDS differential data input. Pair2	36	CH2CLK+	First pixel positive LVDS clock
17	CH1[2]+	First pixel positive LVDS differential data input. Pair2	37	GND	Ground
18	GND	Ground	38	CH2[3]-	Second pixel negative LVDS differential data input. Pair3
19	CH1CLK-	First pixel negative LVDS clock	39	CH2[3]+	Second pixel positive LVDS differential data input. Pair3
20	CH1CLK+	First pixel positive LVDS clock			

Pin No	Symbol	Description	Pin No	Symbol	Description
40	CH2[4]-/NC	Second pixel negative LVDS differential data input. Pair4	46	GND	Ground
41	CH2[4]+/NC	Second pixel positive LVDS differential data input. Pair4	47	NC	Not Connected
42	NC	Not Connected	48	VCC	Input Voltage
43	NC	Not Connected	49	VCC	Input Voltage
44	GND	Ground	50	VCC	Input Voltage
45	GND	Ground	51	VCC	Input Voltage

Notes : 1. NC(Not Connected) : This pins are only used for BOE internal operations.

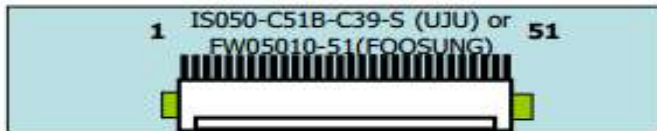
2. Input Level of LVDS signal is based on the EIA 664 Standard.

3. LVDS_SEL : This pin is used for selecting LVDS signal data format.

If this Pin : Low (GND) or Open (NC) → Normal NS LVDS format

Otherwise : High (3.3V) → JEIDA LVDS format

Rear view of LCM



BIST Pattern



3.3 BACKLIGHT UNIT

3.3.1 LED LIGHTBAR UNIT CHARACTERISTICS (Ta = 25 ± 2 °C)

< Table 7. LED Lightbar Unit Characteristics >

Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Lightbar input Voltage	V	75.4	83.2	68.4	V _{RMS}	One channel
Lightbar input current	I _L	450	480	500	mA	One channel
Power consume	W	34	40	44.2	W	One channel
Lightbar Life Time	L _{BL}	30,000	-	-	Hrs	

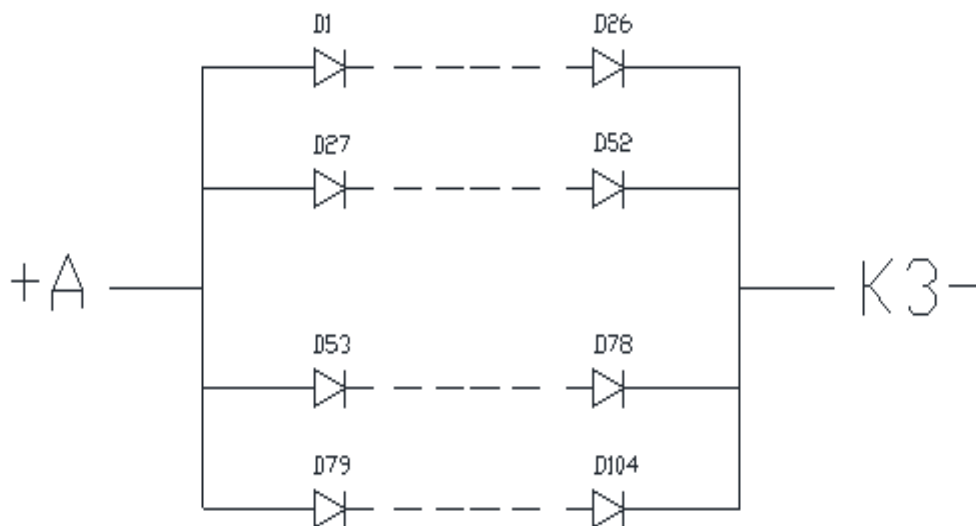
Note (1) The lifetime is defined as the time which luminance of the LED decays to 50% compared to the initial value, Operating condition: Continuous operating at $T_a = 25 \pm 2^\circ\text{C}$, $I_L = 540\text{mA}$

The pin configuration for the housing and leader wire is shown in the table below. Light bar connector type: **CI0102S0000-A, PITCH=2mm**

Pin No.	Symbol	Description	Wire Color
1	+	CH+	Red
2	-	CH-	WHITE

LED Numbers: 20X6 =120

Total: 20 LED / BLU



3.4 LED Constant current source LED

3.4.1 Input Electrical Characteristics

< Table 8 Input Electrical Characteristics >

NO	Item	Symbol	Min	Type	Max	Unit
1	Input Voltage	Vin	20.8	24	26	V
2	Input Current	Iin		3.75	5	A
3	Input Power	Pin		90	116	W
4	Brightness Voltage	Vadj	0(bright)	---	5 (dark)	V
5	Control Voltage	Enable Von=2---5.0V $\pm$ 0.5/Disable Voff=0---0.8V				

3.4.2 Out Electrical Characteristics

< Table 9 Output Electrical Characteristics >

Item	Symbol	Test Conditions	Min	Type	Max	Unit
Output Current (per group)	Iout	Vin=24.0V; Vout=89V; Ta=28°C		480	700	mA
Output Voltage	Vout	Vin=24.0V; Ta=28°C	60	89	185	V
Efficiency	η	Vin=24.0V; Vout=76V;		92.5		%
Output otal group	Ggp			2		
The Total Output Current	R	According to the backlight parameters to adjust output current		960	1400	MA
output power	W out	Vin=24.0V; Vout=120V;		85.4	108	W

The parameter of upon will change when the LCD module changes

3.4.3 Pin Assignments

< Table 10 Pin Assignments >

Input connector: CN1			
Pin No.	Symbol	Description	Parameter
1、 2、 3、 4、 5	+24V	Supply voltage	22~26V
6、 7、 8、 9、 10	GND	Ground	0V
14	ADJ	Dimming control	0V=Brightness Max 5V=Brightness Min
12	N/F	Standby/Operation	On =1-5.0V Off=0-0.5V
13、 11	NC		

Output Socket: CN7.8			
Pin No.	Symbol	Description	Parameter
1	OUT+	Output voltage	60~185V
2	OUT-	Ground	0

The above output parameters are determined according to the optical requirement.
The products are not intended for use in systems in which failures of product could result in personal injury.

3.5 LVDS Interface

–LVDS Receiver : Timing Controller (LVDS Rx merged) / LVDS Data : Pixel Data

< Table 11. Open Cell Input Connector Pin Configuration >

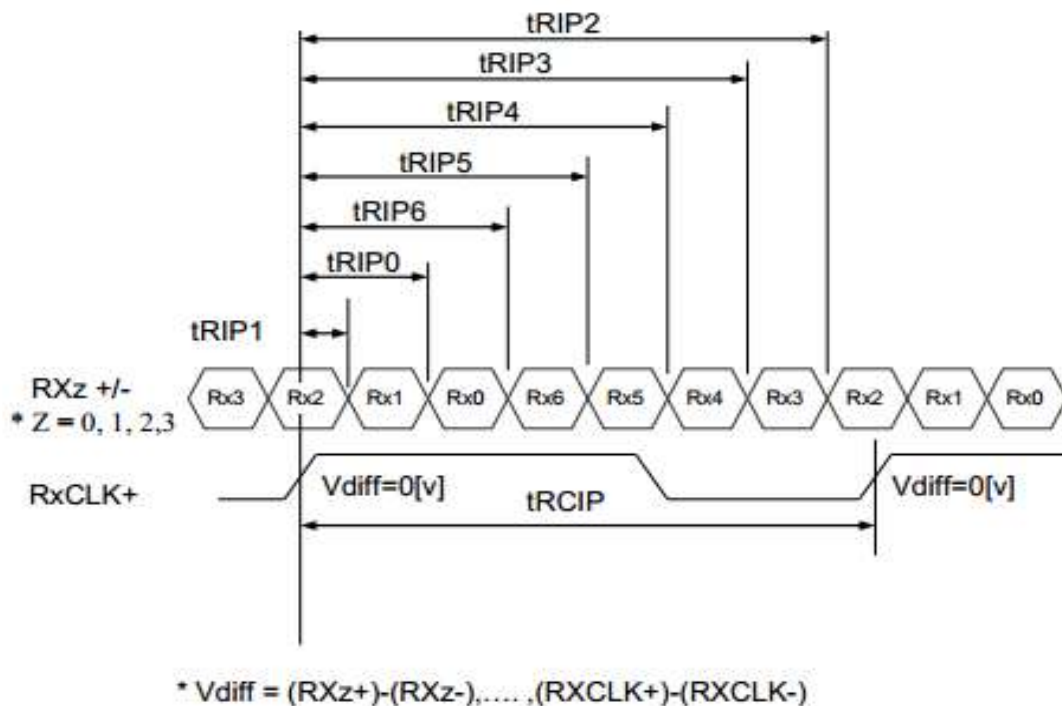
Channel No.	Data No.	8-bit LVDS Type	
		NS	JEIDA
0	Bit-0	R0	R2
	Bit-1	R1	R3
	Bit-2	R2	R4
	Bit-3	R3	R5
	Bit-4	R4	R6
	Bit-5	R5	R7
	Bit-6	G0	G2
1	Bit-0	G1	G3
	Bit-1	G2	G4
	Bit-2	G3	G5
	Bit-3	G4	G6
	Bit-4	G5	G7
	Bit-5	B0	B2
	Bit-6	B1	B3
2	Bit-0	B2	B4
	Bit-1	B3	B5
	Bit-2	B4	B6
	Bit-3	B5	B7
	Bit-4	HS	HS
	Bit-5	VS	VS
	Bit-6	DE	DE
3	Bit-0	R6	R0
	Bit-1	R7	R1
	Bit-2	G6	G0
	Bit-3	G7	G1
	Bit-4	B6	B0
	Bit-5	B7	B1
	Bit-6	-	

3.6 LVDS Rx Interface Timing Parameter

The specification of the LVDS Rx interface timing parameter is shown in Table 12.

< Table 12. LVDS Rx Interface Timing Specification >

Item	Symbol	Min	Typ	Max	Unit	Remark
CLKIN Period	tRCIP	12.82	13.47	15.87	nsec	
Input Data 0	tRIP1	-0.42	0.0	+0.42	nsec	
Input Data 1	tRIP0	tRCIP/7-0.42	tRCIP/7	tRCIP/7+0.42	nsec	
Input Data 2	tRIP6	2 × tRCIP/7-0.42	2 × tRCIP/7	2 × tRCIP/7+0.42	nsec	
Input Data 3	tRIP5	3 × tRCIP/7-0.42	3 × tRCIP/7	3 × tRCIP/7+0.42	nsec	
Input Data 4	tRIP4	4 × tRCIP/7-0.42	4 × tRCIP/7	4 × tRCIP/7+0.42	nsec	
Input Data 5	tRIP3	5 × tRCIP/7-0.42	5 × tRCIP/7	5 × tRCIP/7+0.42	nsec	
Input Data 6	tRIP2	6 × tRCIP/7-0.42	6 × tRCIP/7	6 × tRCIP/7+0.42	nsec	



3.7 Signal Timing Specifications

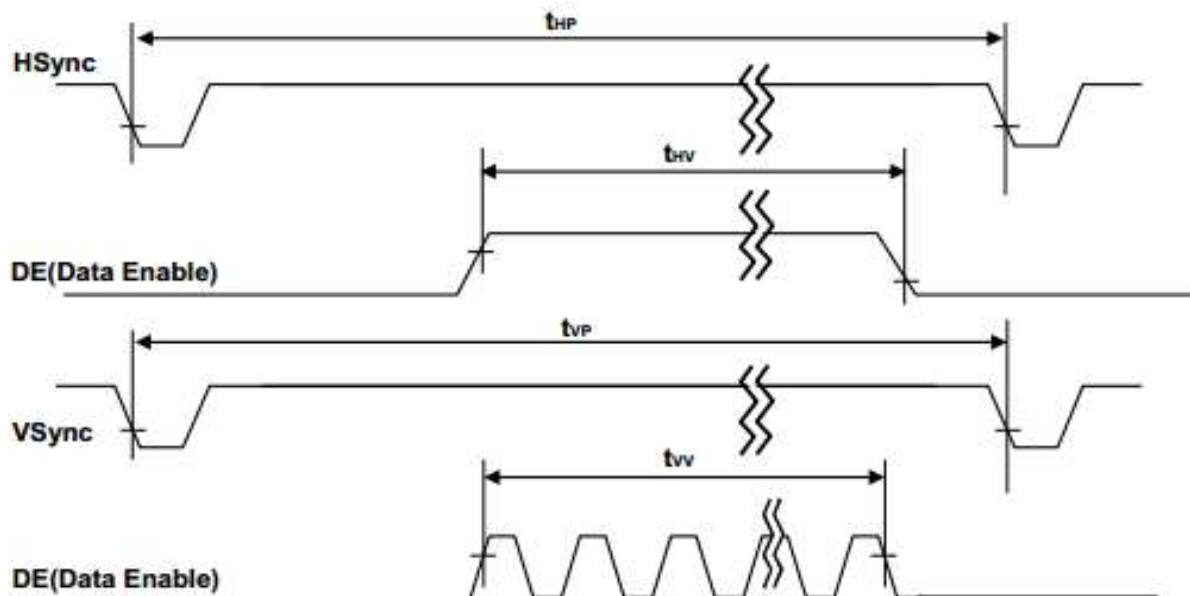
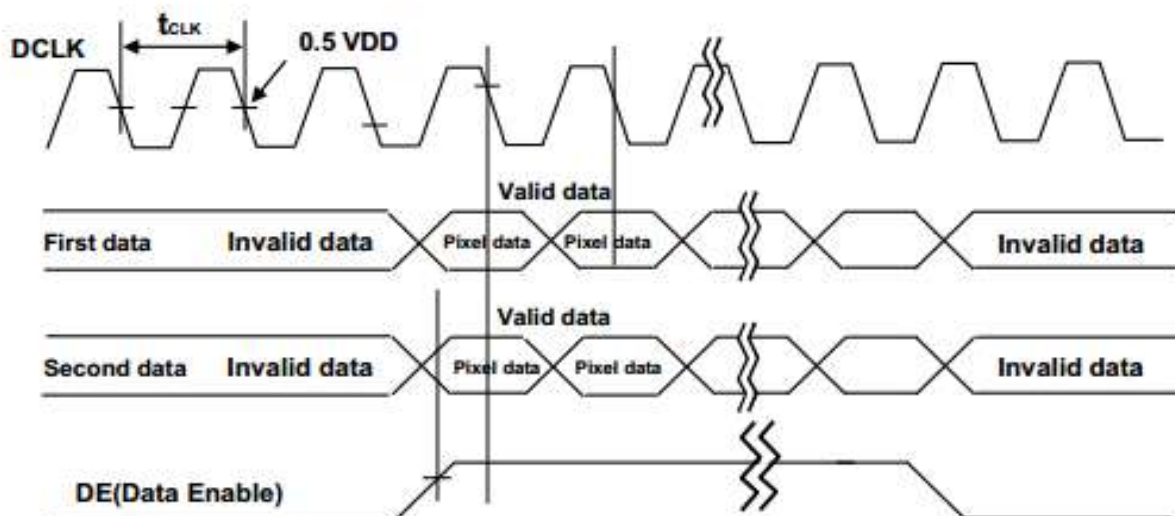
Timing Parameters (DE only mode)

< Table 12 Timing Table >

Item		Symbols		Min	Typ	Max	Unit
Clock	Frequency	1/Tc		63	74.25	78	MHz
	High Time	Tch		-	4/7Tc	-	
	Low Time	Tcl		-	4/7Tc	-	
Frame Period		Tv		1100 (1308)	1125 (1350)	1149 (1380)	lines
				57 (47)	60 (50)	63 (53)	Hz
Horizontal Active Display Term		Valid	t _{HV}	-	960	-	t _{CLK}
		Total	t _{HP}	1060	1100	1200	t _{CLK}
Vertical Active Display Term		Valid	t _{VV}	-	1080	-	t _{HP}
		Total	t _{VP}	1100	1125	1149	t _{HP}

Notes: This product is DE only mode. The input of Hsync & Vsync signal does not have an effect on normal operation.

3.7.1 Signal Timing Waveform



3.8 COLOR DATA INPUT ASSIGNMENT

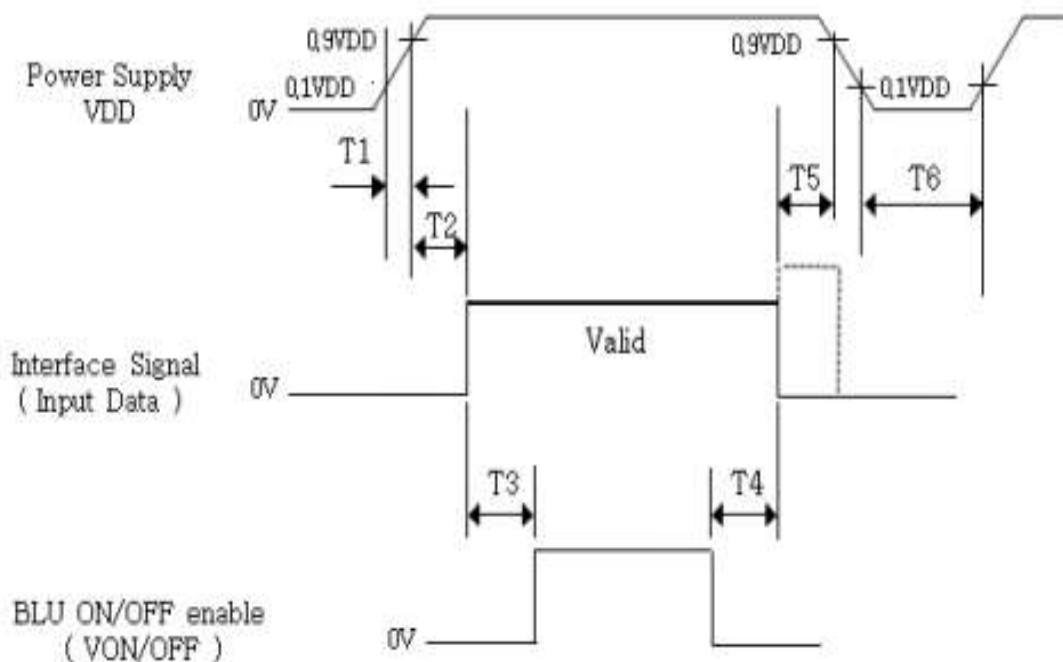
Input Signals, Basic Display Colors and Gray Scale of Colors

< Table 13 Input Signal and Display Color Table >

Color & Gray Scale		Input Data Signal																			
		Red Data								Green Data								Blue Data			
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4
Basic Colors	Black	0	0	0	0	0	0	0	0	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	1	1	1	1	1
	Green	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0
	Cyan	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	Red	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Magenta	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	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
Gray Scale of Red	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	1	0	0	0	0	0	0	0	0	0	0	0	0
	Darker	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	△																				
	▽																				
	Brighter	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	▽	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale of Green	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	0	0	0	1	0	0	0	0
	Darker	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	△																				
	▽																				
	Brighter	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	0	0	0	0
	▽	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	Green	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0
Gray Scale of Blue	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	0	0	0	0	0	0	0	1
	Darker	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	△																				
	▽																				
	Brighter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
	▽	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
Gray Scale of White	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	1	0	0	0	0	0	0	0	1	0	0	0	0
	Darker	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
	△																				
	▽																				
	Brighter	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1
	▽	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

3.9 POWER SEQUENCE

To prevent a latch-up or DC operation of the Open Cell, the power on/off sequence shall be as shown in below.



< Table 14 Sequence Table >

Parameter	Values			Units
	Min	Typ	Max	
T1	0.5	-	20	ms
T2	10	-	100	ms
T3	200	-	-	ms
T4	200	-	-	ms
T5	0	-	-	ms
T6	1	-	-	s

Notes: 1. Back Light must be turn on after power for logic and interface signal are valid.

2. Even though T1 is out of SPEC, it is still ok if the inrush current of VDD is below the limit.

4.0 OPTICAL CHARACTERISTICS

4.1 Test Conditions

< Table 15 Test Conditions >

Item	Symbol	Value	Unit
Ambient Temperature	Ta	25±2	°C
Ambient Humidity	Ha	50±10	%RH
Supply Voltage	V _{CC}	-	V
Input Signal	According to typical value in "3. ELECTRICAL CHARACTERISTICS"		
Lightbar Current	I _L	240	mA
Light bar operation voltage	V	49.5	V

4.2 OPTICAL SPECIFICATIONS

The relative measurement methods of optical characteristics are shown as below. The following items should be measured under the test conditions described in 4.1 and stable environment shown in Note (5).

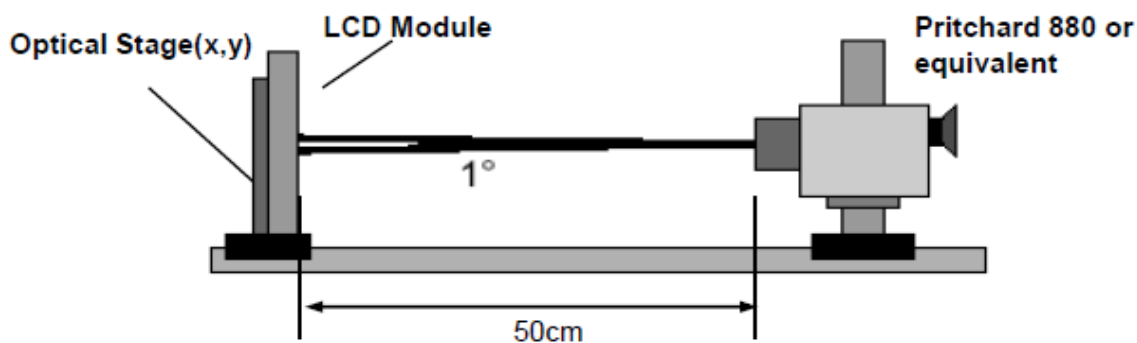


FIG. 1 Optical Characteristic Measurement Equipment and Method

< Table 17 Optical Specifications >

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Contrast Ratio		CR	$\theta_x=0^\circ$, $\theta_y=0^\circ$ Viewing Angle at Normal Direction	1000	1200	—	—	(2)
Response Time		Gray to gray		—	8	10	ms	(3)
Center Luminance of White		L_C		350	400			(4)
White Variation		δW			-	1.43	-	(6)
Color Chromaticity	Red	Rx		Typ. -0.03	TBD	Typ. +0.03	—	(5)
		Ry					—	
	Green	Gx					—	
		Gy					—	
	Blue	Bx					—	
		By					—	
	White	Wx			0.280		—	
		Wy			0.290		—	
	Color Gamut	CG			70	—	%	NTSC Ratio
Viewing Angle	2D (CR>10)	θ_x^+	CR≥10		89	—	Deg.	(1)
		θ_x^-			89	—		

Note (1) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

Contrast Ratio (CR) = L_{255} / L_0

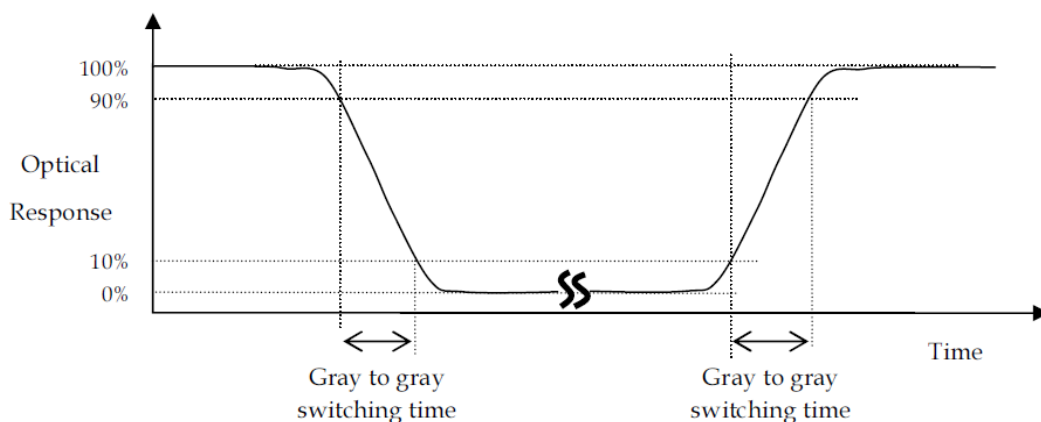
L_{255} : Luminance of gray level 255

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(6)

Note (2)

Definition of Gray-to-Gray Switching Time (VA Model) :



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 (3) Definition of Luminance of White (L_C):

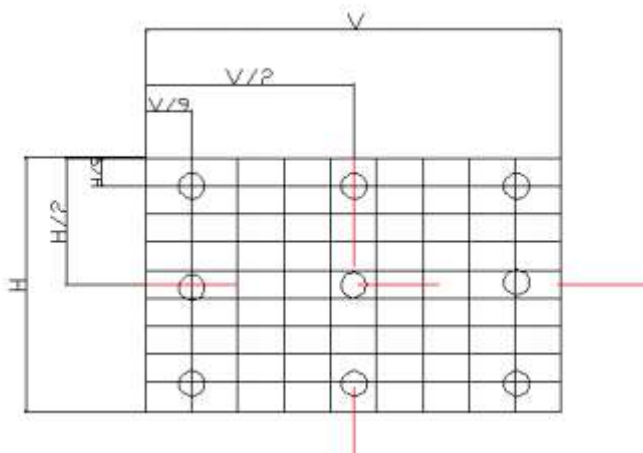
Measure the luminance of gray level 255 at center point and 9 points

$L_C = L(5)$, where $L(X)$ is corresponding to the luminance of the point X at the figure in Note (6)

Note (4) Definition of White Variation (δW) :

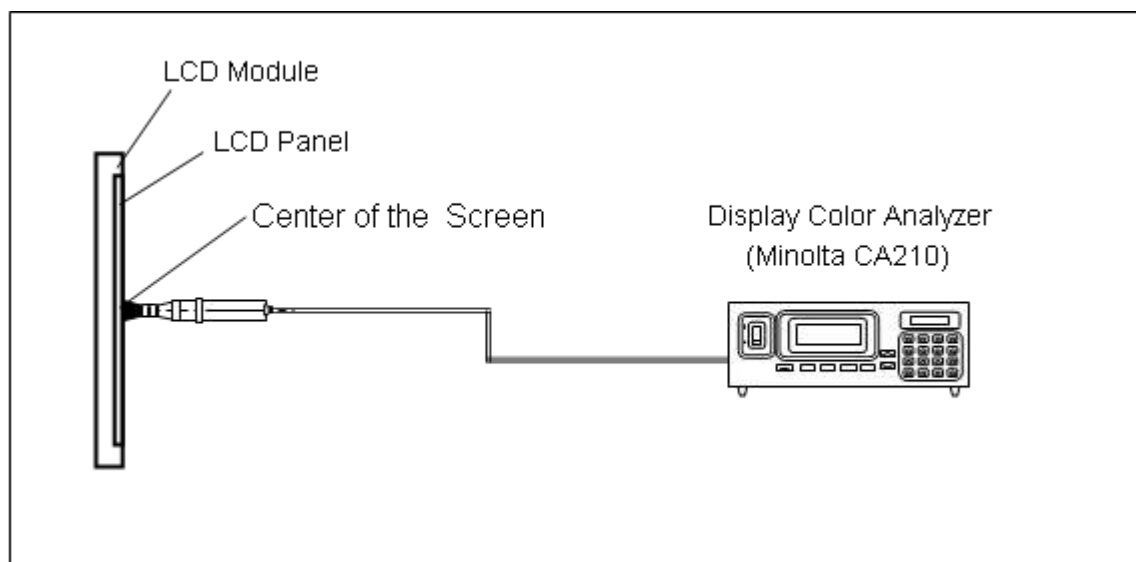
Measure the luminance of gray level 255 at 9 points

$\delta W = \text{Maximum}(\text{Lon1}, \text{Lon2}, \dots, \text{Lon9}) / \text{Minimum}(\text{Lon1}, \text{Lon2}, \dots, \text{Lon9})$

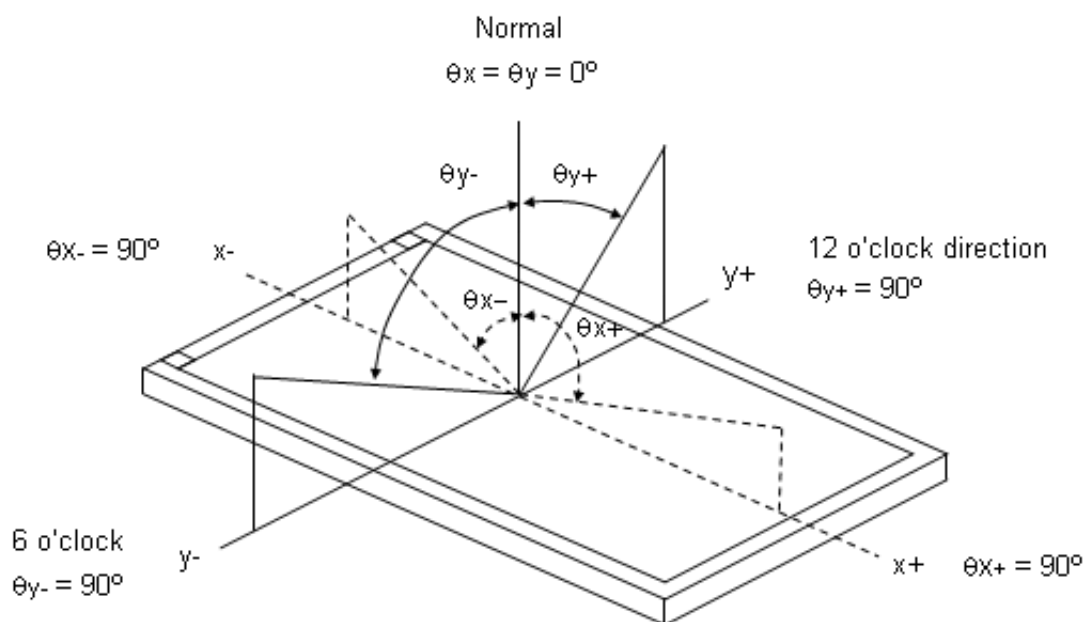


Note (5) Measurement Setup:

The LCD module should be stabilized at given temperature for 30 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 30 minutes in a windless room.

Note (6) Definition of Viewing Angle (θ_x , θ_y):

Viewing angle are measured by CS-2000.



5.0 MECHANICAL SPECIFICATIONS

5.1 Dimensional Requirements

Figure 1(located in Appendix) shows mechanical outlines for the model DV320FHM-NN0.
Other parameters are shown in Table 18.

< Table 18. Dimensional Parameters >

Parameter	Specification	Unit
Active area	1209.6 (H) × 680.4(V)	mm
Pixel pitch	630 (H) × RGB × 630(V)	μm
Number of pixels	1920(H) × 1080(V) (1 pixel = R + G + B dots)	pixels
Weight	15	Kg

5.2 Semi-Glare and Polarizer Hardness

The surface of the LCD has an Anti-glare coating to minimize reflection and a coating to
Reduce scratching.

6.0 RELIABILITY

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

< Table 19. Reliability Test Parameters >

No	Test Items	Conditions
1	High temperature & high humidity storage test	Ta = 60 °C, 90%RH, 240 hrs
2	Low temperature storage test	Ta = -20 °C, 240 hrs
3	High temperature & high humidity operation test	Ta = 50 °C, 80%RH, 240hrs
4	Low temperature operation test	Ta = 0 °C, 240hrs
5	Thermal shock test	Ta = -20 °C ↔ 60 °C (0.5 hr), 100 cycle
6	On/off test	On/Off:10sec(on) / 5sec(off), 30000 times
7	Altitude Test (non-operating)	40000ft -10 °C /24hrs ,25°C /24hrs, -10 °C /24hrs
8	Vibration test (non-operating)	Frequency : 10 ~ 300 Hz, Random Gravity / AMP : 1.0 Grms Period : X, Y, Z 30 min/axis
9	Shock test (non-operating)	Gravity : 50G Pulse width : 11msec, Sine wave ± X, ± Y, ± Z Once for each direction
10	Electro-static discharge test	Air : ± 15kV ,150pF/330Ω ,100Point ,1time/Point Contact : ± 8kV ,150pF/330Ω ,100Point ,1time/Point Non operation Contact: ± 4KV~ ± 6KV,150pF/330Ω,100Point, Input connector Pin, 3 times/pin with no function loss

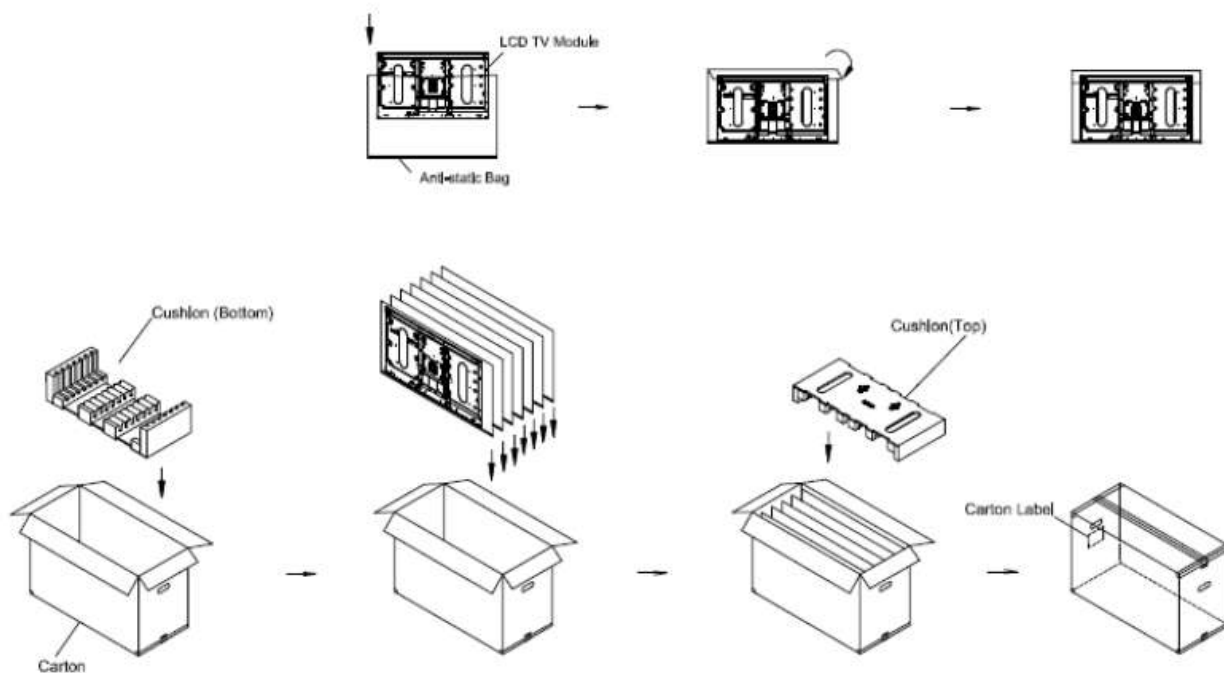
8.0 PACKING INFORMATION

BOE provides the standard shipping container for customers, unless customer specifies their packing information. The standard packing method and Barcode information are shown in below.

8.1 Packing Specifications

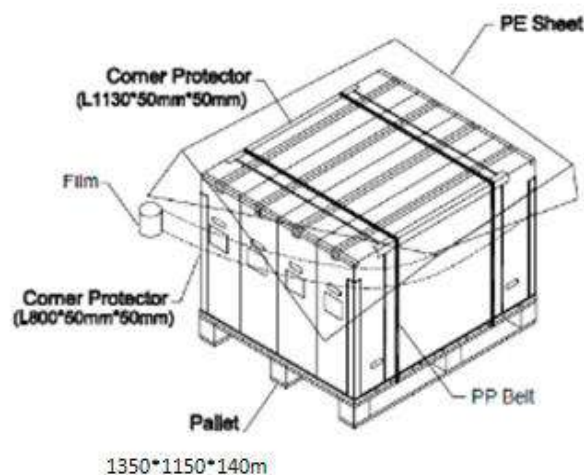
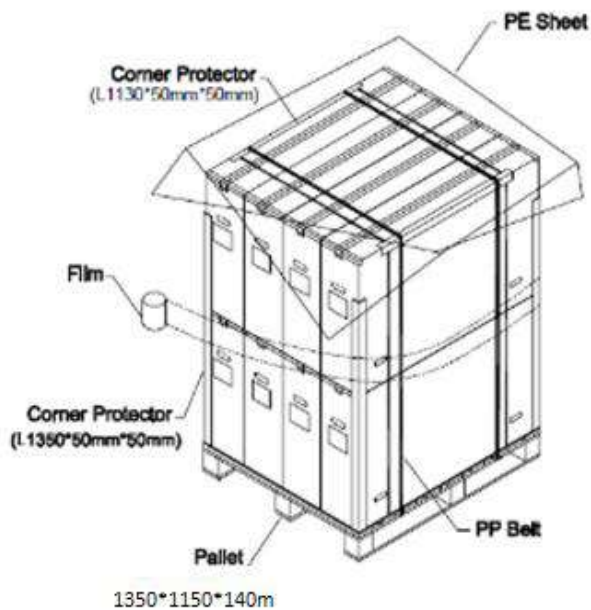
- (1) 8LCD TV modules / 1 Box
- (2) Box dimensions: 1335(L) x560(W) x785(H)mm
- (3) Weight: approximately 120Kg (8 modules per box)

8.2 Packing Method



Sea / Land Transportation (40ft & 40ft HC

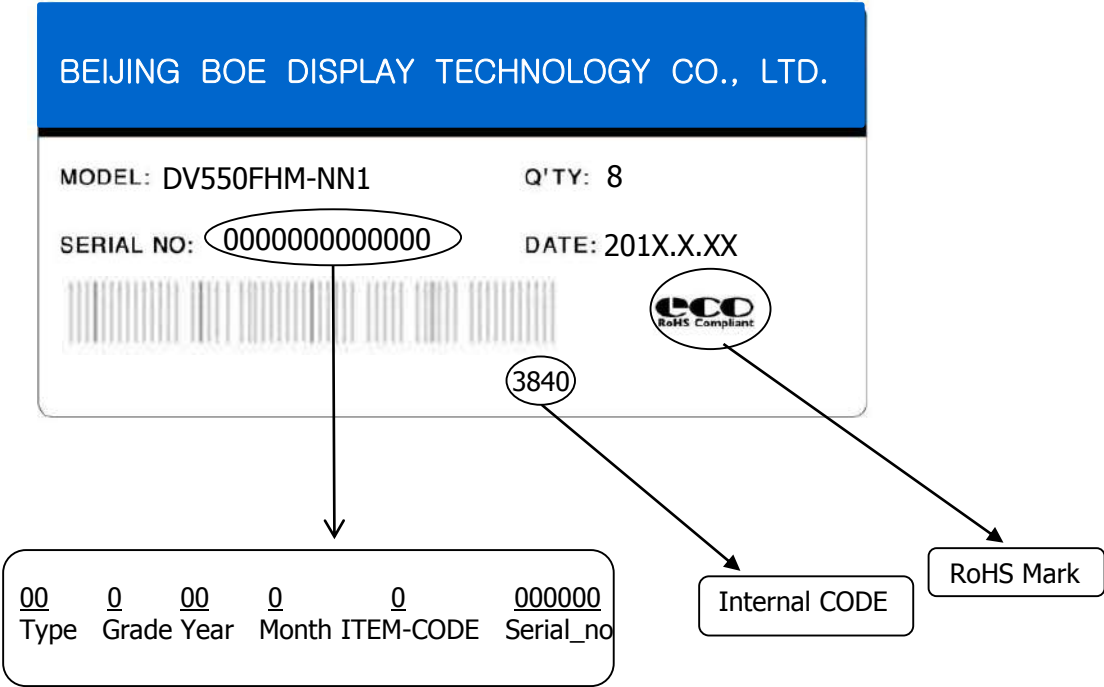
Air Transportation



BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT-LCD	A	2018.12.20

8.3 Box Label

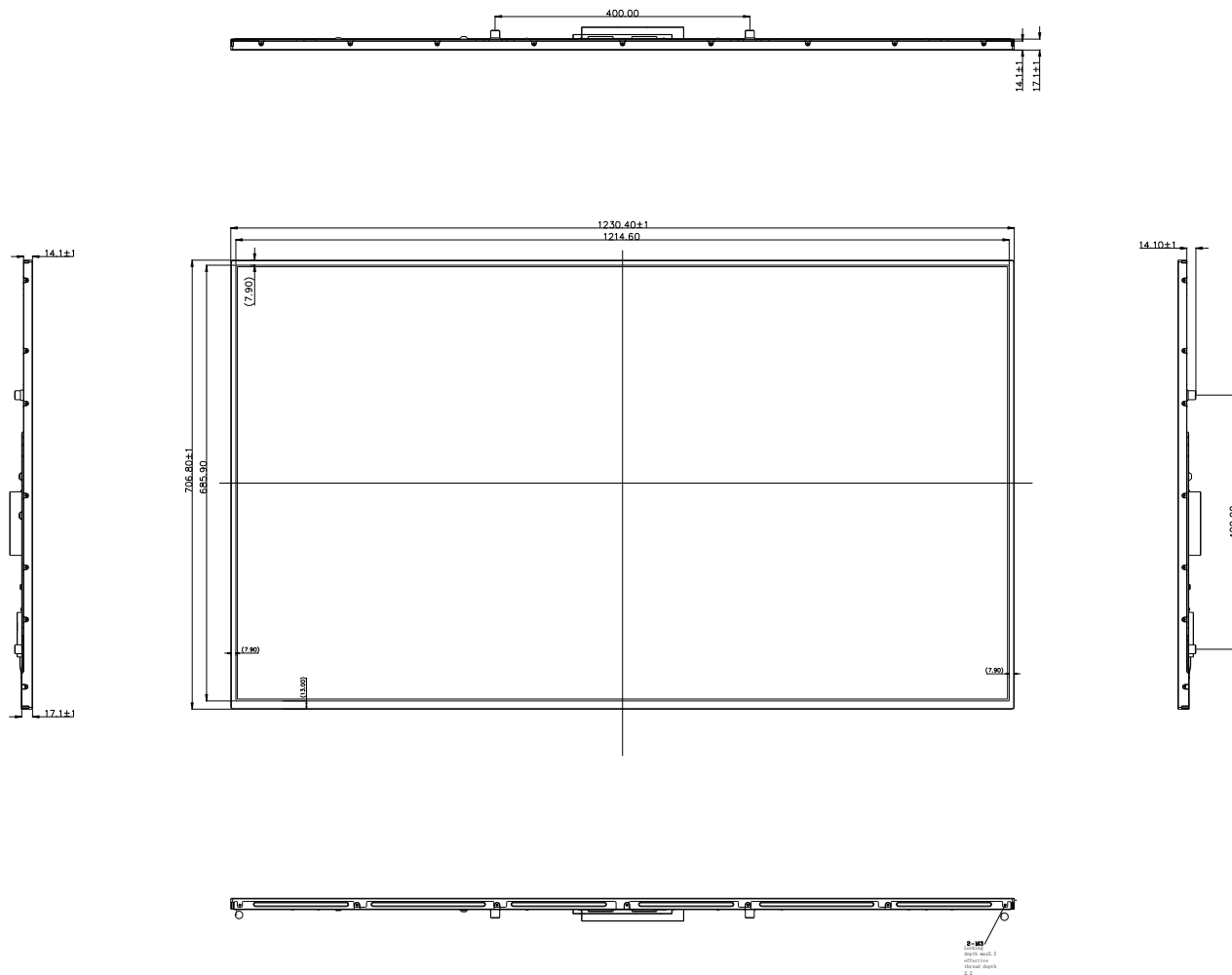
- Label Size : 110 mm (L) × 55 mm (W)
- Contents
 - Model : DV550FHM-NN1
 - Q`ty : 8Pcs
 - Serial No. : Box Serial No. See next page for detail description.
 - Date : Packing Date
 - FG Code : FG Code of Product



BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT-LCD	A	2018.12.20
9.0 HANDLING & CAUTIONS 9.1 ASSEMBLY AND HANDLING PRECAUTIONS (1) Do not apply rough force such as bending or twisting to the module during assembly. (2) It is recommended to assemble or to install a module into the user's system in clean working areas. The dust and oil may cause electrical short or worsen the polarizer. (3) Do not apply pressure or impulse to the module to prevent the damage of LCD panel and backlight. (4) Always follow the correct power-on sequence when the LCD module is turned on. This can prevent the damage and latch-up of the CMOS LSI chips. (5) Do not plug in or pull out the I/F connector while the module is in operation. (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) Moisture can easily penetrate into LCD module and may cause the damage during operation. (9) High temperature or humidity may deteriorate the performance of LCD module. Please store LCD modules in the specified storage conditions. 9.2 SAFETY PRECAUTIONS (1)The operation voltage of a backlight is over 60 Volts. It may cause an electrical shock while assembling with the power. Do not disassemble the module or insert anything into the backlight unit. (2) 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. (3) After the module's end of life, it is not harmful in case of normal operation and storage. 9.3 STORAGE PRECAUTIONS When storing modules as spares for a long time, the following precaution is necessary. (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°C at normal humidity without condensation. (2) The module shall be stored in dark place. Do not store the TFT-LCD module in direct sunlight or fluorescent light.			
SPEC. NUMBER S8-64-8A-182	SPEC. TITLE DV550FHM-NN1 Product Specification		PAGE 30 OF 32

10.0 MECHANICAL CHARACTERISTICS

TFT-LCD Module Outline Dimensions (Front View)



NOTE:

1.USER MOUNTING TORQUE SPEC:

Torque value: M3 6kgf-cm,MAX

Rivet column: M6 20kgf-cm,MAX

TFT-LCD Module Outline Dimensions (Rear View)

